FACTORY

MANAGEMENT AND MAINTENANCE

APRIL 1949

IN TWO PARTS—PART TWO

Industrial Plant Buildings

Fifteenth Annual Presentation

Modern Plant Buildings for Lower Unit Costs 43

Today's Trends in Plant Design and Construction 44

New Industrial Plants

Western Electric Company 46
A. G. Spalding & Bros., Inc. 50
The Maltine Company 53
Columbia Steel Company 55
Ford Motor Company 58
Courier-Journal & Louisville Times Company 62
American Enka Corporation 64

Building Materials Outlook 68

What's New in Small Plants 70

Covel Manufacturing Co., 72 • Monogram Glass Co., Inc., 73 • Independent Pneumatic Tool Co., 74 • The Rapids-Standard Co., Inc., 75 • Stecker Paper Box Co., 76 • Korhumel-Heffron & Preiss Steel Co., 77 • Federal Tool Corp., 78 • Baxter Laboratories, 79 • Rubank, Inc., 80 • "Automatic" Sprinkler Corp. of America, 81 • Seventh Day Adventists, 82 • H. M. Harper Co., 83 • Grinnell Co., Inc., 84 • White Products Corp., 85

New or Old—All Plant Buildings Need Preventive Maintenance 86

A McGRAW-HILL PUBLICATION

GUIDE to modern factory lighting practice

for general lighting

"TURNLOX" RLM DOME REFLECTORS

for lighting from the side

ELLIPTICAL ANGLE

for high bay lighting

"STEELITE"

for explosive atmospheres

EXPLOSION-PROOF

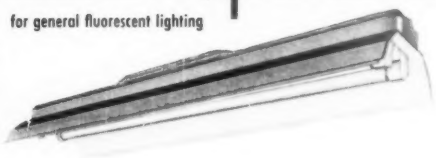
for damp and wet locations

VAPOR-TIGHT

for dusty locations

"TYPE II-G SEALED-FLO"

for general fluorescent lighting



"TWIN-FLO"

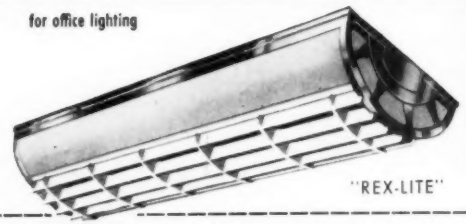
for comfort lighting

"SHIELD-FLO"

for high level lighting

"LITE-LINE"

for office lighting



"REX-LITE"

Benjamin Electric Mfg. Co.
Dept. H
Des Plaines, Illinois

Please send me without cost or obligation Data Bulletins on:

- ☐ "TURNLOX" RLM DOME REFLECTORS
- ☐ "TYPE II-G SEALED-FLO"
- ☐ ELLIPTICAL ANGLE
- ☐ "SHIELD-FLO"
- ☐ "STEELITE"
- ☐ "LITE-LINE"
- ☐ EXPLOSION-PROOF
- ☐ "TWIN-FLO"
- ☐ VAPOR-TIGHT
- ☐ "REX-LITE"

NAME_____

POSITION_____

COMPANY_____

ADDRESS_____

CITY_____ ZONE_____ STATE_____

R-3236

Modern Factory Lighting Practice begins with the Seeing Task . . . with the things that the employee does and the factors which directly and indirectly affect his ability to see.

To fit the lighting to the Seeing Task involved in a specific operation or operations, requires first of all the selection of the proper *type* and *make* of lighting units. These units must be designed so as to provide, satisfactorily and economically, the kind of illumination required by this Seeing Task. Further, the lighting units should meet the special environmental conditions of the location, being so designed as to facilitate maintenance, promote safety and reduce operating costs to a minimum.

The chart above illustrates how some of the most commonly encountered lighting problems can be solved through the specification of Benjamin Lighting Units. Data Bulletins are available on each and may be obtained without cost or obligation from your Electrical Contractor, or by sending the coupon to Benjamin Electric Mfg. Co., Des Plaines, Illinois.

BENJAMIN
Lighting Equipment
Distributed Exclusively through Electrical Wholesalers

ADVERTISERS' INDEX

The April issue of FACTORY is published in two parts, each with separate editorial and advertising content. The advertisers in PART II are indexed below. For complete Index to Advertisements in both parts, see pages 240, 241 in PART I.

Abell-Howe Company B-156
Adam Electric Co., Frank B-131
Aluminum Company of America B-115
Alvey-Ferguson Company B-130
American Abrasive Metals Co. B-148
American Blower Co. B-14
American Lumber & Treating Co. B-138
American-Marietta Company B-13
American Monorail Company B-159
American Structural Products Co. B-151
Anaconda Copper Mining Co. B-147
Anchor Post Fence Div., Anchor Post Products, Inc. B-162
Appleton Electric Company B-37
Atlas Floor Surfacing Machinery Co. B-148
Automatic Sprinkler Corp. of America B-88

Baldwin-Hill Company B-161
Benjamin Electric Mfg. Co. ..... B-25, Second Cover
Blackmer Pump Company B-122
Blaw-Knox Company B-110
Boston Woven Hose & Rubber Co. B-36
Brady Company, W. H. B-40
Buffalo Fire Appliance Corp. ..... Insert B-90
Bull Dog Electric Products Co. B-26
Bussman Manufacturing Co. B-30, B-31

Carey Mfg. Co., Philip B-4, B-5
Champion Lamp Works B-106
Chicago Hardware Foundry Co. B-154
Cleveland Crane & Engineering Co. B-2, B-3
Coffing Hoist Company B-39
Crane Company B-127
Crawford Door Company B-90
Crescent Insulated Wire & Cable Co. B-122

Day-Brite Lighting Co., Inc. B-22
Detroit Steel Products Co. B-10, B-145
Dow Chemical Company B-91
DuPont de Nemours & Co., E. I. (Finishes) B-122

Electro-Rust-Proofing Corp. B-136

Flintkote Company B-149
Frigidaire B-157
Fulton-Sylphon Div., Robertshaw-Fulton Control Co. B-95

General Cable Corp. B-38
General Electric (Lamp Dept.) B-141
General Electric Co. (Mdse. Dept.) B-113, B-144
General Gas Light Co. B-102
Glidden Company B-111
Graybar Electric Co. B-19, B-42
Greenlee Tool Co. B-35
Grinnell Company B-17, B-93

Hartzell Propeller Fan Co. B-8
Hercules Powder Co. B-153
Hines Lumber Co., Edward ..... Insert B-123
Hoffman Specialty Co. B-107
Hubbell, Inc., Harvey B-29

Ideal Industries, Inc. B-24
Ilg Electric Ventilating Co. B-41
Independent Pneumatic Tool Co. B-27
Industrial Control Div., Square D Co. B-33

(Continued on page B-160)

FACTORY

MANAGEMENT and MAINTENANCE

APRIL, 1949—in two parts, part two

ALFRED M. STAEHLE, Publisher — L. C. MORROW, Editor

INDUSTRIAL PLANT BUILDINGS

FIFTEENTH ANNUAL PRESENTATION

Modern Plant Buildings for Lower Unit Costs B-43
Today's Trends in Plant Design and Construction . . . B-44

NEW INDUSTRIAL PLANTS

Western Electric Company, Inc. B-46
A. G. Spalding & Bros., Inc. B-50
The Maltine Company B-53
Columbia Steel Company B-55
Ford Motor Company B-58
Courier-Journal & Louisville Times Company . . . B-62
American Enka Corporation B-64

Building Materials Outlook B-68

What's New in Small Plants B-70

Covel Manufacturing Co., B-72 • Monogram Glass Co., Inc., B-73 • Independent Pneumatic Tool Co., B-74 • The Rapids-Standard Co., Inc., B-75 • Stecker Paper Co., B-76 Korhumel-Heffron & Preiss Steel Co., B-77 • Federal Tool Corp., B-78 • Baxter Laboratories, B-79 • Rubank, Inc., B-80 • "Automatic" Sprinkler Corp. of America, B-81 Seventh Day Adventists, B-82 • H. M. Harper Co., B-83 Grinnell Co., Inc., B-84 • White Products Corp., B-85

New or Old—All Plant Buildings Need Preventive Maintenance B-86

Catalog Service B-102

McGRAW-HILL PUBLISHING CO., Inc.

James H. McGraw (1860-1948), Founder.

JAMES H. McGRAW, Jr., President; CURTIS W. McGRAW, Vice-President and Treasurer; EUGENE DUFFIELD, Executive Assistant for Publications; NELSON BOND, Director of Advertising; JOSEPH A. GERARDI, Secretary; J. E. BLACKBURN, Jr., Director of Circulation.

Factory Management and Maintenance, April, 1949. Vol. 107, No. 4. Published monthly. McGraw-Hill Publishing Co., Inc. Address all communications to the editorial, executive and circulation offices, 330 West 42nd Street, New York 18, N. Y. Entered as second-class matter July 22, 1918, at the post office at New York, N. Y., under the Act of March 3, 1879.

Factory Management and Maintenance is a consolidation of Factory and Industrial Management (including "Factory"); and Maintenance Engineering. Subscription rates—United States, U. S. Possessions: $3, 1 year; $4, 2 years; $5, 3 years. Canada: $4, 1 year; $6, 2 years; $8, 3 years. Pan-American countries: $6, 1 year; $10, 2 years; $12, 3 years. Other countries: $15, 1 year; $25, 2 years; $30, 3 years. Single copies, 25c; in Latin America, 75c; in all other countries, $1.50. Factory Management and Maintenance solicits subscriptions only from production, maintenance, and management executives and engineers in manufacturing plants. Please indicate company connection and title on all subscription orders. Cable address, "McGraw-Hill, New York." Member A.B.P., Member A.B.C. Copyright 1949 by McGraw-Hill Publishing Co., Inc. All rights reserved.

District Managers: G. E. Pomeroy, Boston; A. B. Martin, R. P. Rose, Chicago; R. C. Greiner, Cleveland; T. W. Van Winkle, Detroit; J. S. Crawley, R. E. Sawyer, New York; E. Macaulay, Philadelphia; R. W. Garrison, Pittsburgh; W. R. Pankow, St. Louis. Other offices at Atlanta, Dallas, Los Angeles, San Francisco, Washington, London.

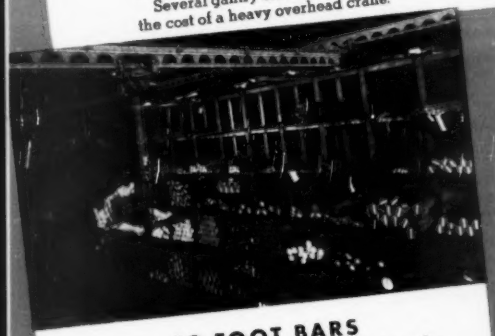
World News offices: London, Paris, Berlin, Moscow, Prague, Shanghai, Bombay, Mexico City.

Tramrail HANDLING WHICH WILL HELP *You?*

GANTRY CRANES SOLVE PRODUCTION PROBLEMS

Inexpensive single-leg gantry cranes are solving production problems in many plants. They usually work under heavy overhead cranes and take care of light local handling.

Several gantry cranes often can be obtained for the cost of a heavy overhead crane.



20 FOOT BARS Stored and Handled Efficiently

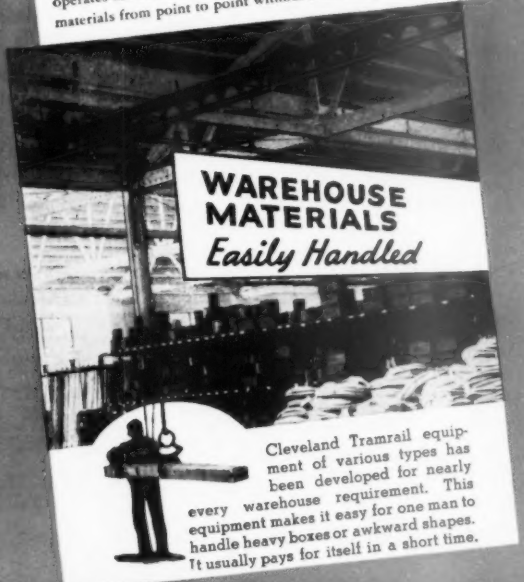
Simple, inexpensive overhead tramrail cranes make it easy to handle long, unwieldy bars and store them in racks where readily found. One man can easily and quickly place a heavy bar into or take out of storage and deliver to any point covered by the crane.

CAB-OPERATED CARRIER HANDLES LONG PIPE AND BEAMS

It is difficult to handle long pipe and beams through narrow shop aisles and around corners on floor conveyances. Cleveland Tramrail equipment makes this work fast and easy because it operates above floor obstacles and traffic. It hoists and delivers materials from point to point without rehandling.

675 MOLDS EVERY HOUR

Every hour 675 molds are carried to the pouring section and then through cooling and shakeout areas on this Cleveland Tramrail continuous foundry mold handling system. Because travel machinery is overhead, away from dirt and hot metal, production interruptions and maintenance are kept at minimum.



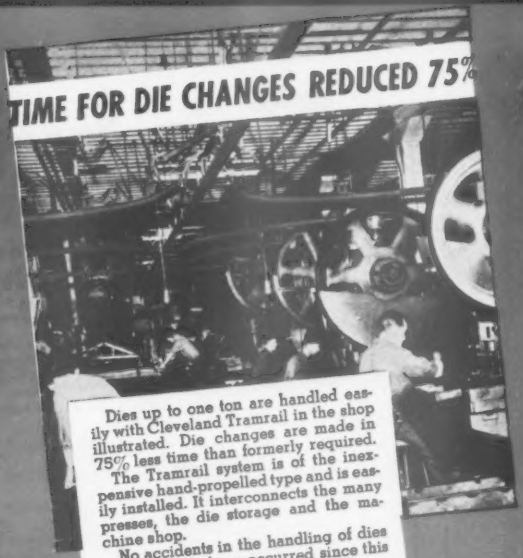
WAREHOUSE MATERIALS *Easily Handled*

Cleveland Tramrail equipment of various types has been developed for nearly every warehouse requirement. This equipment makes it easy for one man to handle heavy boxes or awkward shapes. It usually pays for itself in a short time.

SAVES $10,000 PER YEAR

This great saving was made with a Cleveland Tramrail cab-operated crane and motor-driven paper roll grab, because of better handling efficiency and elimination of damage losses due to crushed edges, cuts and tears.

TIME FOR DIE CHANGES REDUCED 75%



Dies up to one ton are handled easily with Cleveland Tramrail in the shop illustrated. Die changes are made in 75% less time than formerly required.

The Tramrail system is of the inexpensive hand-propelled type and is easily installed. It interconnects the many presses, the die storage and the machine shop.

No accidents in the handling of dies and materials have occurred since this system was installed 4 years ago.

STORING AND HANDLING 1728 REELS

The three racks shown above are 63 feet long and will accomodate 576 reels per row or a total of 1728 reels. This number of 24" reels will store 300,000 pounds of wire.

The reels are taken to or removed from the racks by means of a Cleveland Tramrail overhead rail system with easily operated chain hoists and special reel grabs. Each reel space is numbered and each reel is weighed before placing on racks, which makes keeping a perpetual inventory easy.

Rolls, or loads of any materials, conveyed on a Cleveland Tramrail overhead system, are quickly and accurately weighed without handling by running the carrier onto a track section which is connected to a floor scale.

GET THIS BOOK!

BOOKLET No. 2008. Packed with valuable information. Profusely illustrated. Write for free copy.

CLEVELAND TRAMRAIL DIVISION
THE CLEVELAND CRANE & ENGINEERING CO.
3248 East 284th Street, Wickliffe, Ohio

CLEVELAND TRAMRAIL

OVERHEAD MATERIALS HANDLING EQUIPMENT

This building would

examples of changes made during construction at low cost

DUST COLLECTING SYSTEM —its exact location was not determined until after the building was well along.

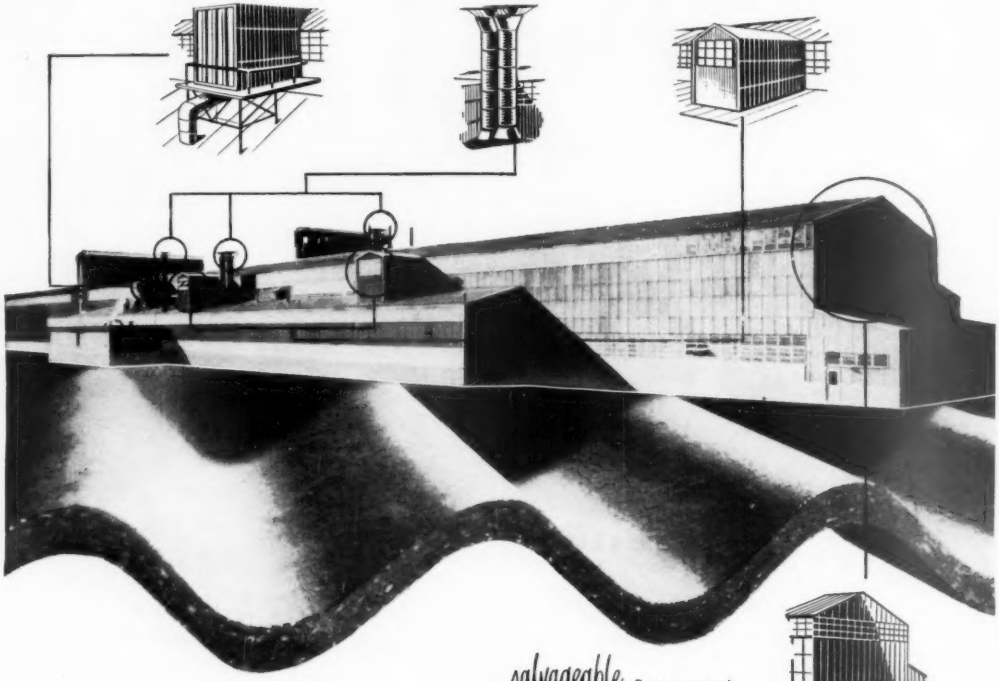
Due to the flexibility of Corrugated Careystone, even major changes and additions were made quickly and with relative ease and economy.

STACKS — to take off exhaust from paint and ceramic coating spray booths.

Careystone's resistance to fumes and heat made these additions practical and economical. No special protective materials were necessary.

PENTHOUSES—to house vertical conveyors at temperatures up to 150° F.

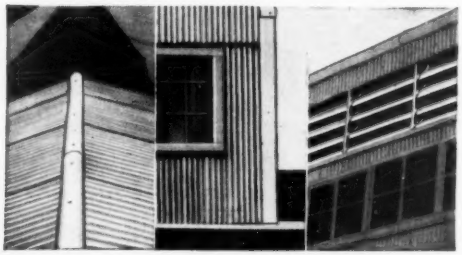
New wall openings made after walls were in place . . . with a minimum of time and expense. All Corrugated Careystone was reused in the new plan.



salvageable Corrugated Careystone is durable, strong, inorganic, fire-resistant, easy-to-handle and apply. Its modern design fits it for modern interiors and modern exteriors—for a new kind of modern construction.

END WALL—designed for future expansion. Wall can be dismantled and Corrugated Careystone reused if building is extended to gain more floor space.

Ridge Rolls, Corner Rolls (inside and outside) and Louvres, all made of Asbestos-Cement, are available from Carey in sizes to fit all construction requirements



easy application

SAW IT **NAIL IT** **BOLT IT**

cost you 40% less, too, with Careystone

We built this plant with our own products . . . to make more products to build more plants! We estimate we saved as much as 40% over conventional masonry construction by using Careystone Corrugated Asbestos-Cement Sheets. This should be real news for you—especially if you are making plans for a new building or changes in present ones. We needed to get a new plant into operation quickly. We did it by building it with Corrugated Careystone.

For commercial and industrial building and for all light-weight construction, we know of no building method that takes less time in erection; that withstands weather any better; that offers more flexibility in usage or expansion; that requires less maintenance; that provides more protection from fire, weather, decay and rot; or that costs less.

Most plants undergo some changes while under construction. Buildings built with Asbestos-Cement Careystone, Corrugated or in flat sheets, cost less to change, cost less to build, cost less to maintain!

specifications of corrugated Careystone

FOR WALLS • ROOFS • PARTITIONS

1. 4.2″ Corrugation. 2. Approximately 3/16″ thick 3. Weight: 3.75 lb. per sq. ft. 4. Length: Up to and including 12′. 5. Width: 42″ 10 corrugations. 6. Maximum purlin span 4′6″. 7. Maximum girt span 5′6″.

Enclosure strips, fasteners and accessories, made especially for use with Corrugated Careystone, can also be furnished by Carey.

SEE FOR YOURSELF. Write Carey for "Manual 808"—address Dept. **FM-4**

Flat Asbestos-Cement Sheets
85% Magnesia • Asbestos
Industrial Rock Wool
Pipe Coverings
Blocks • Batts • Papers
Built-up Roofing
Roof Coatings
Highway Products

Carey

In Canada: The Philip Carey Co., Ltd.
1557 MacKay Street, Montreal 25, P. Q.

Offices in principal cities

THE PHILIP CAREY MANUFACTURING CO., CINCINNATI 15, OHIO

YOU CAN BE **SURE**.. IF IT'S

Westinghouse

STOP!

...have you planned your power distribution system?

Building a new production area? Everything laid out to do the job you've planned? Sure it is.

BUT . . . have you planned for the *best system* to power your new production lines? Their ability to produce depends directly on this power system.

Will your distribution system save you money *over a period of years?* Have you thought about *future* loads? Is it flexible enough to handle shifting production lines? Will it provide voltage regulation you need?

Whatever the problem—Westinghouse can help you find the "one best" system for *your* plant.

Our engineers have worked with *all types* of industries for a good many years. They have found new and better answers to *all* phases of power distribution. Westinghouse offers this co-operation to all Industry in getting power to do the best job at the lowest possible cost. J-94788

Here's REAL help for your "System Planning"

1. **A new 34-page booklet:** "Industrial Plant Distribution Systems", B-4045. Fact-filled pages and colorful diagrams present the basic systems most widely used in Industry today. Find how to choose the *best system* for *your* plant.

2. **System Selector:** A wealth of information condensed to a pocket-size selector! In a matter of minutes you can make preliminary decisions on the system that answers *your* requirements.

3. **Color Movie:** Get all the facts visually! This 16-mm, full-color movie is a 20-minute dramatization that will point the way to new economies in plant power distribution. Ask one of our representatives for a free showing of "The Right Power Distribution System". No obligation, of course.

If you're expanding or building a new production area . . . get this invaluable information NOW!

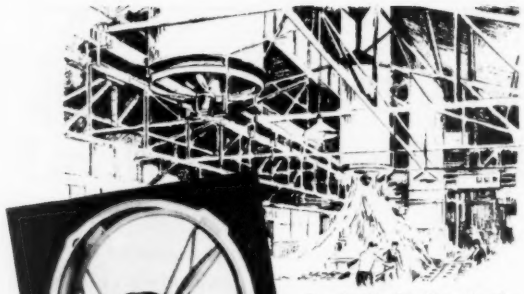
Call your nearest Westinghouse office, or write Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Penna.

Westinghouse

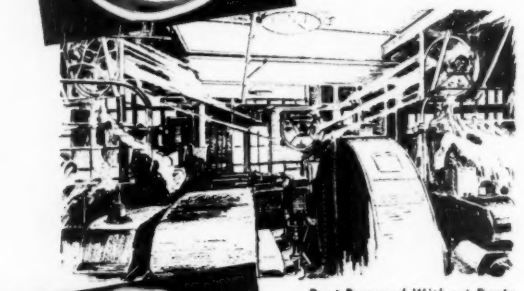
SYSTEM PLANNING SERVICE

HARTZELL FANS

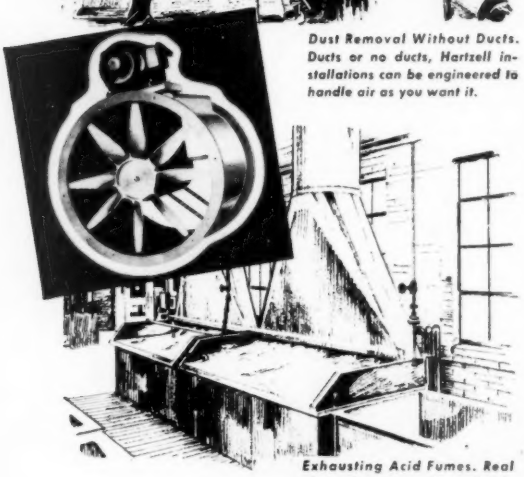
will solve your HEAT-DUST-FUME problems . . .



Foundry Pouring-Floor Ventilation. No more steaming heat, acrid fumes or grimy air when Hartzell does the job.



Dust Removal Without Ducts. Ducts or no ducts, Hartzell installations can be engineered to handle air as you want it.



Exhausting Acid Fumes. Real air-moving power is needed to pull fumes away from the faces of workers. Hartzell does it.

Look to the air in your plant if you want to know the reason for bad production spots — high man-hour costs, careless workmanship, high accident rate, low employee morale.

It isn't always the man or the machine. It's often the air. If it feels hot it's costing you money. Or cold. If you can see it, it's dirty. If it tickles your nose it's fume-laden. If you feel it move it's drafty. If it is oppressive, "heavy," it's too humid. Air like that is overhead cost — deadwood — profit-stealer — bad business!

Hartzell fans, plus Hartzell field-and-factory engineering, have been whipping situations like those for more than twenty years. Hartzell is an ***industrial*** fan-and-blower specialist. One whose field and factory men know industrial air-movement problems because they've gone into the plants and come up with the answers. One whose products will make air turn hand-springs for you against any pressure, as high as 8" water gauge. And one who has an engineering office near you to make sure you get the ***results***, not just the fan or the blower.

Industrial people like Hartzell fans and blowers because they are built ***for industrial use***. Low installation cost; low operating cost; low maintenance; minimum attention; long life.

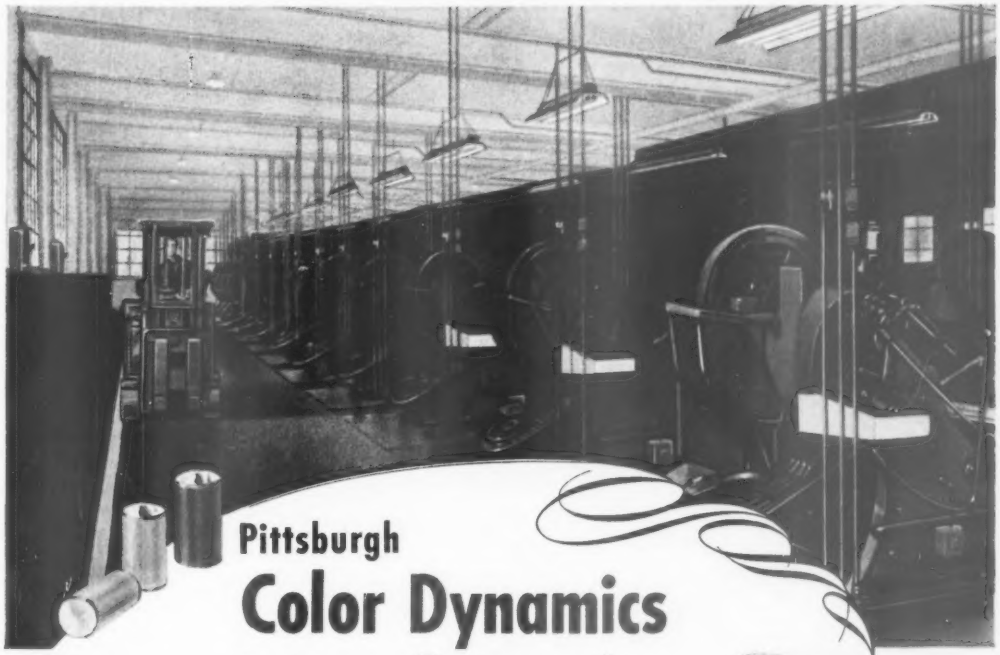
Get good air. If you don't know your nearby Hartzell representative, write us for his name.

HARTZELL
PROPELLER FAN COMPANY
PIQUA, *DIV. OF CASTLE HILLS CORP.* OHIO

●

Member of **PROPELLER FAN MANUFACTURERS' ASSOCIATION**

PROPELLER-TYPE FANS AND BLOWERS • ROOF VENTILATORS • UNIT HEATERS • ENGINEERING OFFICES IN PRINCIPAL CITIES



Pittsburgh Color Dynamics

increases efficiency and improves morale of employees in Continental Can Company plant

Open top press room of Continental Can Company's Baltimore plant after being repainted according to COLOR DYNAMICS specifications.

PITTSBURGH can present no more convincing claim for the benefits resulting from the use of COLOR DYNAMICS—based upon the scientific principles of the *energy in color*—than these comments of John G. Murray, Eastern Division Manager of Operations of the Continental Can Company, of New York City. This company is one of the world's largest producers of metal containers for foods, beverages, and kitchenware of many types.

"We repainted our Baltimore plant, according to the principles of COLOR DYNAMICS," writes Mr. Murray. "After nearly a year's experience we find the new color scheme has reduced eye strain and physical fatigue among our employees. It has also created a more pleasing atmosphere. A better spirit among the workers has prevailed since this repainting has been done."

In hundreds of other industries production executives are similarly learning that color properly "engineered" on machines, walls, floors and ceilings actually improves efficiency and simplifies housekeeping.

We'll be glad to make a COLOR DYNAMICS survey of your plant on request without obligation to you.

Paint RIGHT with Color Dynamics

Paint BEST with Pittsburgh Paint!

The benefits of COLOR DYNAMICS are made more enduring when you use Pittsburgh's long-lasting high-quality paints for every need.

WALLHIDE—available in four types: **FLAT**—a velvet-like finish that is beautiful and restful; **SEMI-GLOSS**—with higher sheen; **GLOSS**—with enamel-like sheen; **PBX**—extra-durable finish can be washed frequently.

LAVAX PBX ENAMEL—for woodwork, furniture or metal trim. Brushes out freely and easily to a smooth, satin finish.

FLORHIDE—for floor surfaces. Quick-drying, tough, can be scrubbed with soap solutions.

LAVAX MACHINERY ENAMEL—a durable finish impervious to grease, grime or dirt.

SEND FOR A COPY OF THIS BOOK!

Pittsburgh Plate Glass Co., Paint Div., Department PM-49, Pittsburgh 22, Pa.

☐ Please send me a FREE copy of your new revised and enlarged Booklet, *"Color Dynamics in Industry."*

☐ Please have your representative call for a Color Dynamics Survey of our properties without obligation on our part.

Name _____

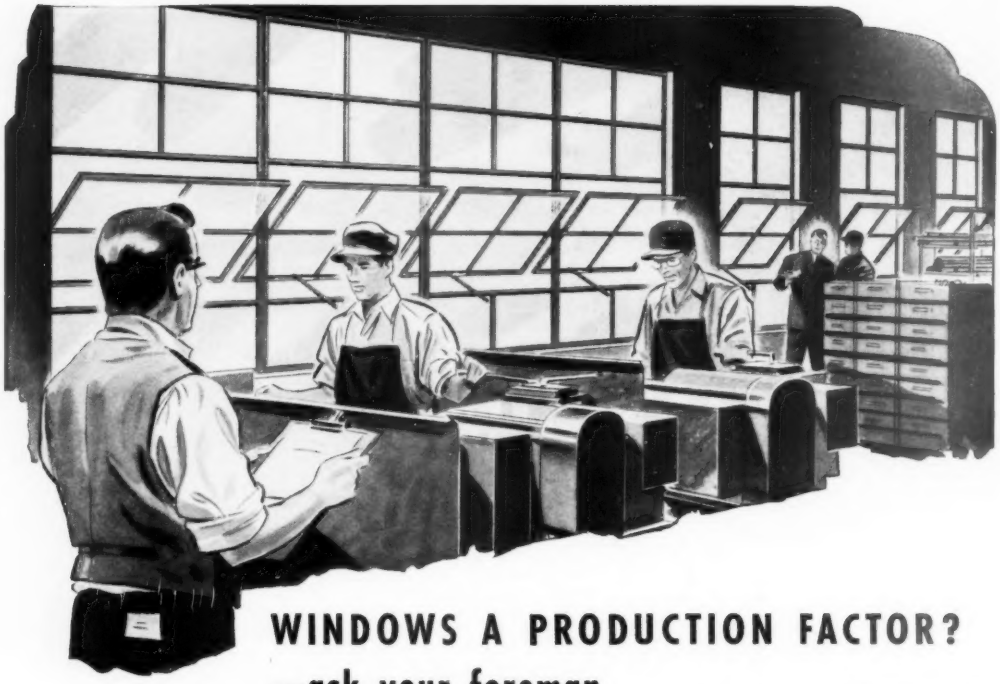
Street _____

City _____ County _____ State _____

PITTSBURGH PAINTS

PAINTS • GLASS • CHEMICALS • BRUSHES • PLASTICS

PITTSBURGH PLATE GLASS COMPANY



WINDOWS A PRODUCTION FACTOR?

—ask your foreman

Your foreman is very close to your window problems.

He knows how much cool, clean, fresh air . . . clear, eye-easing daylight . . . and an occasional morale-lifting glance outdoors can help his crew increase production. And cut down accidents.

A foreman knows where single windows are ample . . . or where a huge bay would be better.

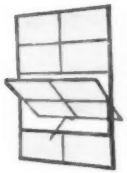
Fenestra® has a *right* steel window for every daylighting and ventilating job in your plant. And for office, lab, warehouse and other buildings. Designed to modular standards, Fenestra Windows can be installed economically as single units, or as large bays of combined units. But perhaps even *more* important to you—

Standardized Fenestra Windows cost less to begin with.

Fenestra production volume permits standardization of a large variety of windows. They're good-looking and rugged—frame and vent corners are mortised and tenoned and air-hammer riveted. They're warp-proof . . . fire-safe. Shown here are three industrial types available in many heights and widths.

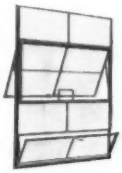
Let us help you determine the best types for *your* needs. Fenestra engineers will even make detailed window layouts for your plant—at no obligation. Write to Detroit Steel Products Company, Dept. FM-4, 2266 E. Grand Blvd., Detroit 11, Mich.

*®



PIVOTED WINDOW

Widely used for an abundance of daylight, fresh air and see-through vision, to improve morale and production efficiency. Combine vertically or horizontally to form entire walls of windows.



COMMERCIAL PROJECTED WINDOW

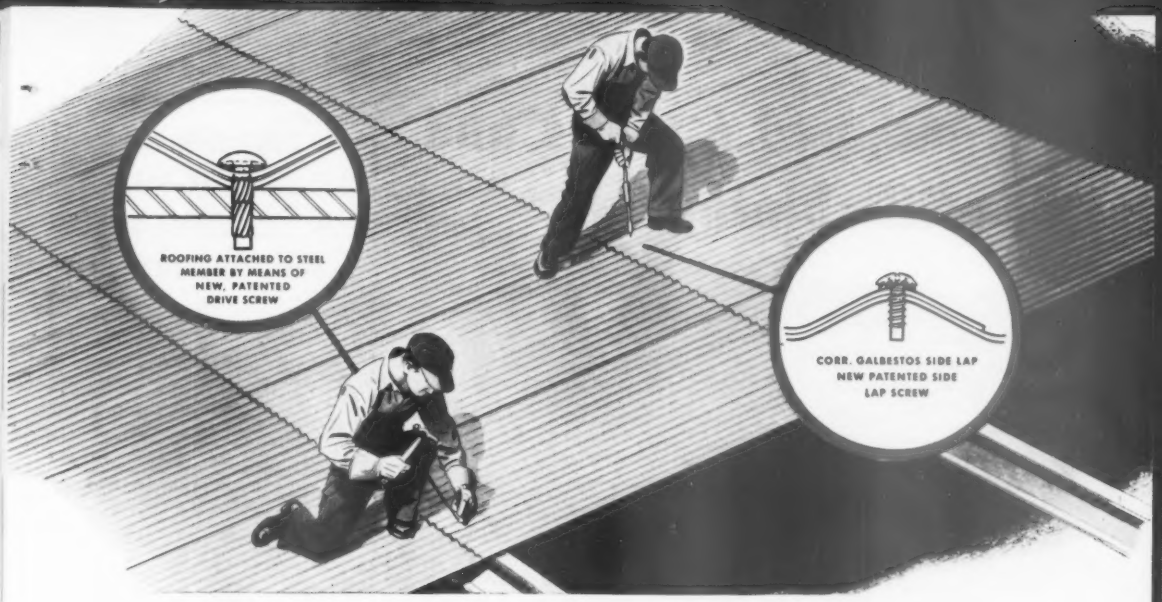
Popular for efficient, economical screening or shading—vents do not interfere. Open-out vent serves as a canopy over opening, protecting interior against rain; open-in vent is a built-in windguard, shedding water outside.

SECURITY WINDOW

A steel window with integral steel grille to bar prowlers. Passage of material is checked, too. Ideal for first floors, windows bordering fire escapes and windows near roofs of adjoining buildings.

Fenestra

INDUSTRIAL STEEL WINDOWS


ROOFING ATTACHED TO STEEL MEMBER BY MEANS OF NEW, PATENTED DRIVE SCREW
CORR. GALBESTOS SIDE LAP NEW PATENTED SIDE LAP SCREW

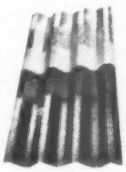
HERE'S THE FIRST *REAL* WAY TO CUT BUILDING COSTS

GALBESTOS

— *a material-saving material*

Galbestos is Robertson's protected metal for roof and side. It reduces building costs by requiring fewer purlins, less structural steel, less foundation.

Galbestos also virtually eliminates maintenance.



Galbestos is sheet steel to which asbestos is fused by metallic bond, impregnated with asphalt, then waterproofed. This bond is so tough, so inseparable, that Galbestos can be worked on ordinary sheet-metal shop equipment—crimped, rolled, sheared, bent and riveted like unprotected metal.

Standard roofing and siding sheets come up to 12 ft. by 33″; maroon or black; flat or in several corrugations; for use over steel skeleton framework.

Galbestos has been proved on installations all over the world to outlast any comparable material under the most severe weather and industrial heat and corrosion. It stands up so thoroughly that maintenance is practically eliminated. Maintenance is another word for continuing cost. You will find that Galbestos cuts material cost as Top-Speed Fastening cuts time cost. Write for information on GALBESTOS. H. H. Robertson Co., Pittsburgh 22, Pa.

Top-Speed Fastening* is a new system developed to reduce erection time. Building cost is time plus materials. To get real cost reduction you must cut one or the other, preferably both.

Top-Speed Fastening uses a newly invented group of tools, so simple your own men can use them, so fast that *the same number of men, in the same time, can apply twice as much material.*

Top-Speed permits all work from outside, no interior scaffolding. This accounts for the time saved. Now—you can also use Top-Speed Insulating*, another new Robertson system. It also eliminates all interior scaffolding, insulation being installed entirely from outside before the roofing sheets have been placed.

If you build with Top-Speed methods, *the time saved in fastening pays for the labor required to install insulation.* Saving is so great, you insulate for the mere cost of the material.

You can work this new method as well on repairs as on new construction. It's the first real development to cut the higher building costs caused by higher wages. Write for details on Top-Speed Fastening.

*Patents Pending

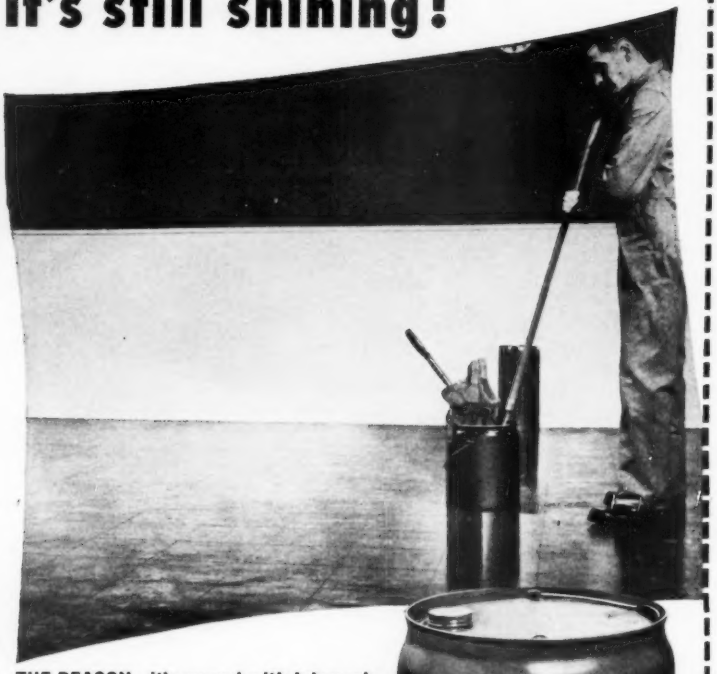
H. H. ROBERTSON CO.

2418 Farmers Bank Building
Pittsburgh 22, Pennsylvania

Offices in 50 Principal Cities
World-Wide Building Service

Galbestos is listed and classified by Underwriters' Laboratories, Inc., and the Associated Factory Mutuals Laboratories

Wet mopped 6 times and it's still shining!



THE REASON—it's waxed with Johnson's Brown Label No-Buff Floor Finish!

When your floors are waxed with Johnson's Brown Label, *they stay waxed and bright through heavy traffic and wet mopping!* Floors retain 90% of their original gloss after as many as 6 wet moppings. Think what this means from a maintenance angle—easier cleaning, less time, less waxing, greater economy in maintenance labor . . . maintenance dollars. Put your floors on the Johnson Brown Label basis *now*. Use the coupon below to send in your order or have a J-Man demonstrate the amazing shine qualities and wear resistance of Johnson's Brown Label.

Try this easier way to clean—wax—maintain your rubber and asphalt tile floors

CLEAN

Mop on solution of Johnson's Floor Cleaner to soften all old wax films and dirt for easy removal.

SCRUB

After Cleaner has worked for 2 or 3 minutes, scrub thoroughly with electric scrubbing machine to break up old films.

RINSE

Remove all Cleaner solution, wax and dirt from floor by mopping with clear water rinses. Allow floor to dry completely before waxing.

WAX

With mop or applier spread on full, even coat Johnson's Brown Label No-Buff Floor Finish and let dry. For maximum luster and slip resistance, apply 2nd coat same as 1st.

S. C. Johnson & Son, Inc., Maintenance Wax Dept.
1526 Howe Street, Racine, Wisconsin

- ☐ Ship 5 gal. can Johnson's Brown Label No-Buff at $2.75 per gal.
- ☐ Ship 5 gal. can Johnson's Floor Cleaner at $2.35 per gal.
- ☐ Have your J-Man call
- ☐ Send Free Floor Care Manual

Name _____

Title _____

Establishment _____

Address _____

City _____ *State* _____

S. C. Johnson & Son, Inc.
Racine, Wisconsin
•
Makers of
JOHNSON'S WAX

"I FOUND A WAY TO MAKE PAINT STEP UP PRODUCTION AND PROFITS"

Turn Plant Painting from Maintenance to Income!

"I'd always thought of painting as a maintenance expense. Then one day I saw an amazing booklet from the Valdura Division of American-Marietta. It's called, 'To Increase Production . . . Plan Before You Paint Your Plant.'

"The booklet tells an impressive story how certain colors increase production by improving visibility . . . how color saves thousands of dollars by reducing accident hazards . . . how it decreases work fatigue. An exclusive feature of the booklet is the Valdura DIAL-A-TONE Color Selector. It makes choosing the right colors for your plant as easy as A-B-C!

"The choice of scientifically correct colors and Valdura quality paints meant that we actually turned a maintenance expense into a valuable source of income!"

This Valdura booklet shows how proper color selection pays off in extra efficiency, extra production. Based on experience of efficiency engineers, safety experts, and superintendents in hundreds of plants. Here's something practical, usable—not theory, but facts you, too, can put to good use right in your own plant!

GET AMAZING NEW DIAL-A-TONE COLOR SELECTOR FREE!

Now you can judge the results before you paint! Thanks to the exclusive Dial-a-Tone Color Selector, you can choose the right colors for your plant as easy as dialing a phone. Just turn 3 dials to get any one of 108 paint color combinations. Saves disappointment, dissatisfaction, time and money!

A Great Name in Paint Making

FULL COLOR BOOKLET TELLS YOU HOW— MAIL COUPON FOR YOUR *FREE* COPY!

Valdura's valuable booklet can be yours at no cost. Just mail the coupon below and a free copy will be sent to you. It tells you how to select colors so that you gain dollar-saving benefits. The Dial-a-Tone Color Selector is only one exclusive feature you will find in this Valdura booklet on color. Profit from the valuable information in Valdura's booklet. Mail the coupon for your FREE COPY today!

VALDURA DIVISION

AMERICAN-MARIETTA COMPANY

43 East Ohio Street Chicago 11, Illinois

Valdura Division America-Marietta Company (Dept. X)
43 E. Ohio St., Chicago 11, Ill., U.S.A.

Please send me a free copy of "To Increase Production . . . Plan Before You Paint Your Plant"—the booklet that includes the handy DIAL-A-TONE Color Selector.

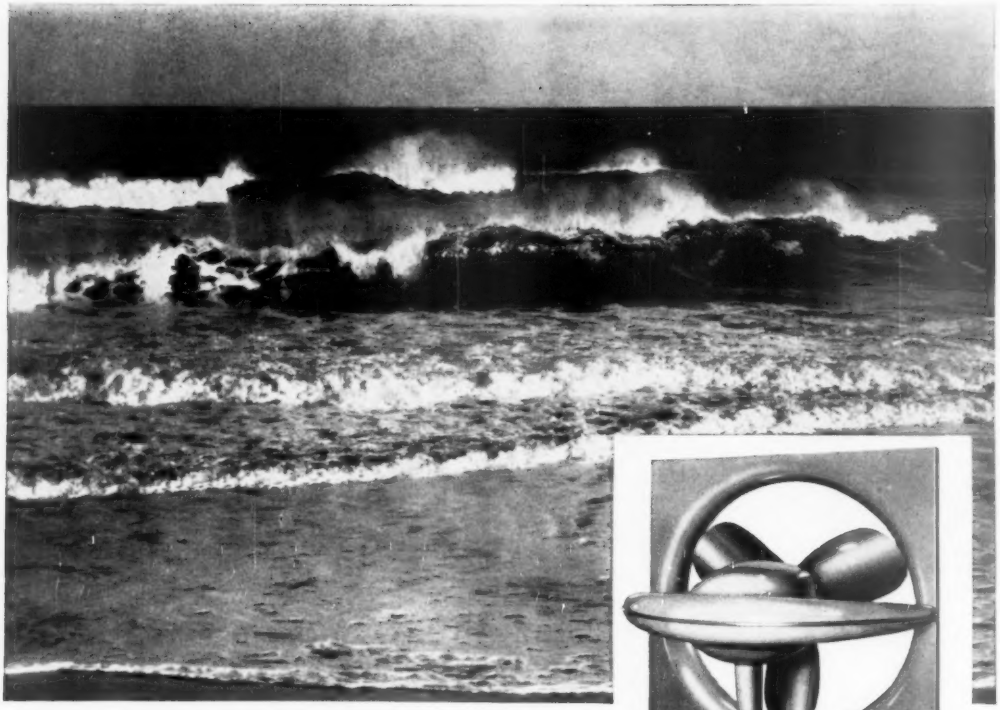
NAME.....

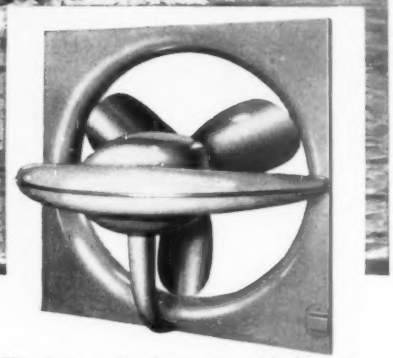
YOUR TITLE.....

COMPANY.....

ADDRESS.....

CITY.....ZONE....STATE.....





New Ventura Fan harmonizes with the most modern interiors—readily exhausts bad air, disagreeable odors, fumes, smoke, etc.

ENJOY FRESH AIR IN YOUR BUSINESS

Wonderfully fresh, invigorating air like that pictured above can be yours if you install a new Ventura Fan in your plant or business.

Remember, good air is good business!

You'll be amazed how good ventilation boosts employee morale, curbs illness and encourages better working conditions in *your* business.

Look into this well-designed, easy-to-clean Ventura Fan. Its capacity is certified. There's no exposed wiring and its economical operation will surprise you. Ventura Fans are built in capacities from 1000 cfm to 79,000 cfm, free delivery.

For general ventilation where a duct system is required, use an American Blower Utility Set. They're quiet, low on costs and have new Aileron Control to regulate airflow.

Consult American Blower today for all your air handling, heating, cooling and drying needs.

Utility Set for general ventilation where duct systems are required.

AMERICAN BLOWER CORPORATION, DETROIT 32, MICH.
CANADIAN SIROCCO COMPANY, LTD., WINDSOR, ONTARIO
Division of American Radiator & Standard Sanitary Corporation

AMERICAN BLOWER

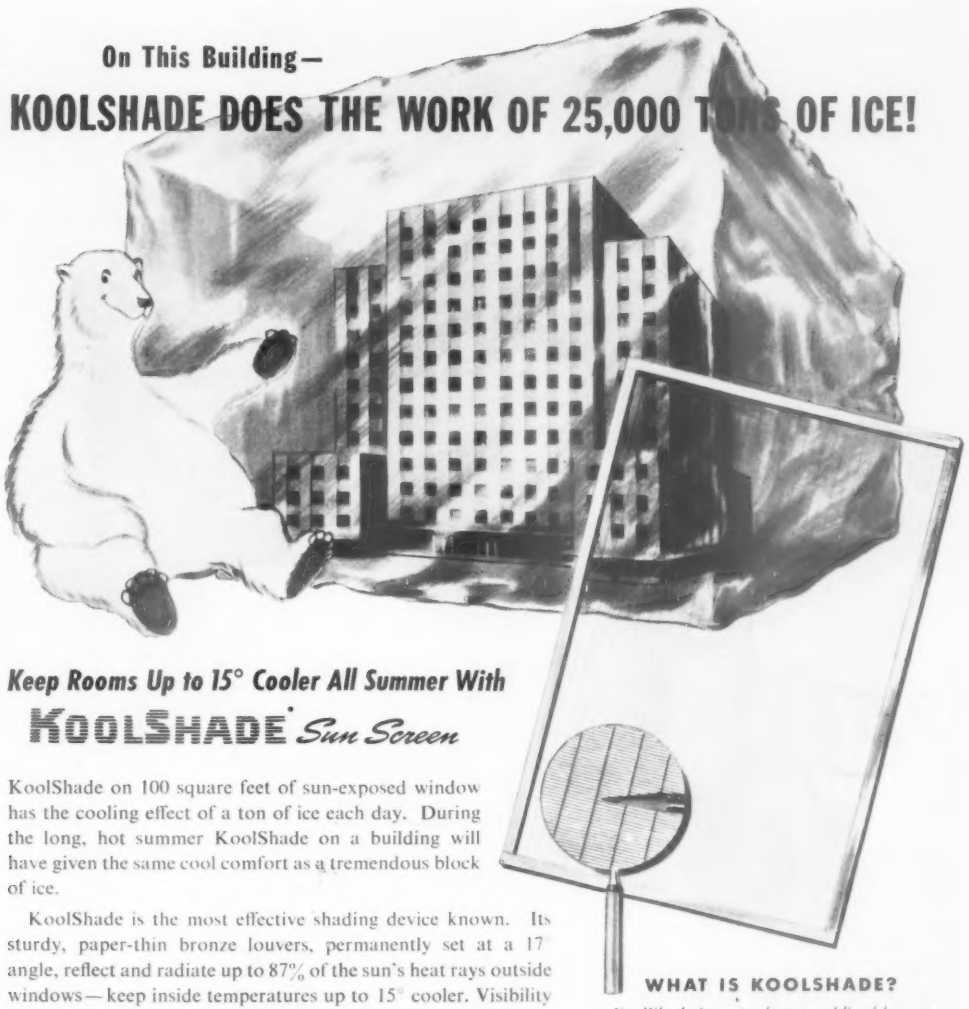
AMERICAN BLOWER

Serving home and industry

AMERICAN-STANDARD • AMERICAN BLOWER • CHURCH SEATS • DETROIT LUBRICATOR • KEWANEE BOILER • ROSS HEATER • TONAWANDA IRON

On This Building—

KOOLSHADE DOES THE WORK OF 25,000 TONS OF ICE!



Keep Rooms Up to 15° Cooler All Summer With

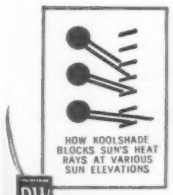
KOOLSHADE* *Sun Screen*

KoolShade on 100 square feet of sun-exposed window has the cooling effect of a ton of ice each day. During the long, hot summer KoolShade on a building will have given the same cool comfort as a tremendous block of ice.

KoolShade is the most effective shading device known. Its sturdy, paper-thin bronze louvers, permanently set at a 17° angle, reflect and radiate up to 87% of the sun's heat rays outside windows—keep inside temperatures up to 15° cooler. Visibility through KoolShade is excellent . . . there's no loss of light and air. It's economical and long-lasting, easy-to-install and requires no maintenance. Write today for a sample.

WHAT IS KOOLSHADE?

KoolShade is a sturdy pre-oxidized bronze woven wire with horizontal wires rolled paper thin and permanently set at a 17 degree angle similar to a miniature Venetian blind. Insect protection equal to 16 mesh insect screen.



KoolShade Advantages

1. Low maintenance cost—no painting needed.
2. Easy to install in present frames.
3. No fire or wind hazard—doesn't rust or rattle.
4. Long-lasting—ten-year-old jobs still perfect.
5. Does not alter appearance of building.
6. Prevents sun-fading of drapes and furnishings.
7. Gives excellent protection from insects.

INGERSOLL

KOOLSHADE* *Sun Screen*

*Trade Mark Property of

INGERSOLL STEEL DIVISION • Borg-Warner Corporation

MAIL THIS COUPON TODAY FOR FREE SAMPLE

Ingersoll Steel Division
Borg-Warner Corp., Dept. TB-4
321 Plymouth Court, Chicago 4, Ill.

Please send KoolShade sample, descriptive literature and name of nearest KoolShade distributor.

Name.....

Company.....

Address.....

City.....State.....

get ALL the dust EVERYWHERE with INVINCIBLE VACUUM CLEANERS

LIGHT PORTABLE–1½ H.P. –Complete and positive separation precedes the vacuum producer.

Thorough removal of industrial dust, dirt and litter, in less time, with less labor (and therefore at less cost) is achieved by Invincible Vacuum Cleaners. Even hard-to-reach spots are readily cleaned by these rugged machines and their handy attachment tools. Such complete cleaning insures better working conditions for your men, and less "dust-damage" to your equipment or product. That is why Invincibles in industry quickly pay for themselves.

INVINCIBLE
Vacuum Cleaner Mfg. Co.
DOVER, OHIO

SEND FOR BOOKLET— it tells—

- . . . About the 100,000 Invincibles now in service
- . . . Why Invincibles cut costs in every industry
- . . . How Invincibles clean every spot in the plant
- . . . About the many materials reclaimed or removed

"HOT UNDER THE COLLAR" about last winter's fuel bills?

You're probably getting more "heat" out of last winter's fuel bills than you got all winter out of the fuel . . . if your plant had one of those old-fashioned systems that banks the heat uselessly up against the ceiling. You paid for heat, but you didn't get it down at the working level.

Now is the time to do something about fuel savings next winter . . . by pushing the heat down where you need it, with Thermolier Unit Heaters. It's wise to do it right now because you can get Thermoliers and the other materials easily at this season. Skilled labor has the time to do the job just the way you want it. And you're not risking a hurry-up job this fall.

Make next winter a season of heat-saving instead of heat-wasting. Savings with Thermoliers differ, of course, with differences in buildings, but a railroad shop saved 35%; one manufacturer, 29%; and a company operating 50 plants averaged 30%. Your savings may be even larger. Get in touch with Grinnell or your local Thermolier distributor.

THERMOLIER
UNIT HEATING

Construction features that save extra money

Use of plain thermostatic trap, the simplest and least expensive kind of trap, made practical because of Thermolier's exclusive internal cooling leg.

Maximum capacity provided at all times and annoying, destructive water hammer eliminated by built-in pitch of tubes and internal cooling leg which assure continuous drainage of condensate.

Damaging strains caused by expansion and contraction eliminated by "U" type expansion tubes.

Safety and durability assured with leak-proof tube-to-header construction.

Eight other important features. Write for Thermolier Catalog.

99 YEARS PIPING

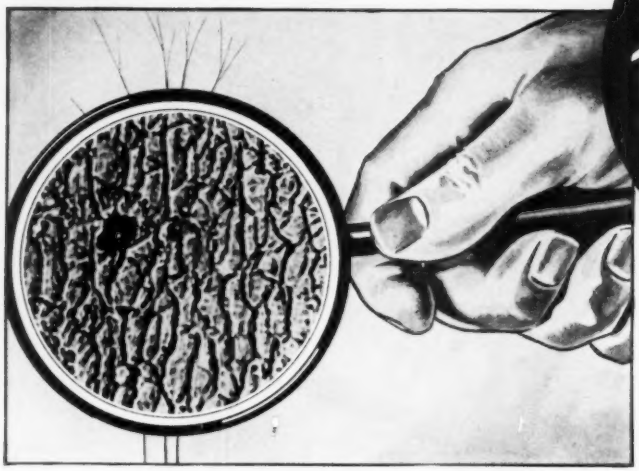
GRINNELL

Grinnell Company, Inc., Providence 1, R. I. Branch warehouses: Atlanta • Buffalo • Charlotte • Chicago • Cleveland • Cranston • Fresno • Kansas City • Houston Long Beach • Los Angeles • Milwaukee • Minneapolis • New York • Oakland • Philadelphia • Sacramento • St. Louis • St. Paul • San Francisco • Seattle • Spokane

Test your Brush I.Q.

No. 3 in a Series

How do paint brushes "carry" paint?



By capillary attraction. The bristle, when enlarged under a microscope, shows a scaley substance extending the entire length of each bristle. The combination of scale and the natural split ends, or "flags" of the bristle, give it capacity, or the ability to carry paint.

PITTSBURGH—
Produces the Most Complete Brush Line in the Industry!

Painting . . . In Pittsburgh you have a source upon which you can always depend. Whether it's Gold Stripe, Neoceta or Nylon, you can be sure of top quality, rugged construction and lasting service. And for economy in these days of rising costs, better try the Pittsburgh Neoceta Brushes.

Maintenance . . . Pittsburgh's "Lightning Line" of sweeps, dusters and scrubs is specifically designed to do *all* your dirty work. They work harder, last longer!

Industrial . . . You'll find Pittsburgh's engineering representative valuable in developing any type of power-driven brush for your particular specifications. Write or call PITTSBURGH PLATE GLASS COMPANY, BRUSH DIVISION, BALTIMORE 29, MARYLAND.

***One Source—One Quality—One Name to Remember*—PITTSBURGH!**

BRUSHES FOR INDUSTRY

BRUSHES · PAINT · GLASS · CHEMICALS · PLASTICS

PITTSBURGH PLATE GLASS COMPANY

He brings you the best of everything electrical!

Everything you get from Graybar will do the job it is intended to do — and will do it *well.* That's because Graybar has always been *highly selective* in choosing product lines to distribute. In Graybar warehouses, coast to coast, there are 100,000 different electrical items you can trust!

With a single phone call to our nearest office, you or your electrical contractor can order everything you need for lighting, wiring, signaling, ventilating — practically *any* electrical construction or maintenance job. Portable electric and hand tools, too.

Whenever you or your contractor want help in planning an electrical system, a Graybar Specialist in the proper field will work with you free.

Graybar is owned wholly by its operating and retired personnel. Whether your order is big or little, it will always get careful attention . . . all along the line.

Graybar Electric Company, Inc. Executive offices: Graybar Building, New York 17, N. Y. 4930

You get the best of everything electrical via Graybar

IN OVER 100 PRINCIPAL CITIES

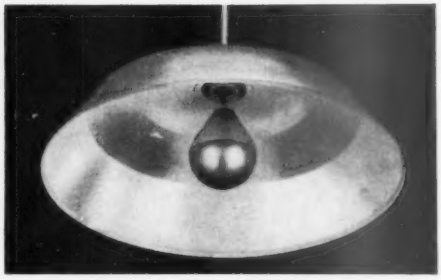
for example

On the following pages, you'll find descriptions of typical items you can get from Graybar

For SIMPLICITY AND EFFICIENCY in Industrial Lighting

USE... SILVRAY LIGHTING LUMINAIRES

Simplicity is the keynote of Speedlight industrial lighting systems—Simple, lightweight fixture design—simple electrical circuit—and utmost simplicity of maintenance—just screw in the silvered bowl incandescent lamp with the Sealed Reflector. And with all these features which add up to low investment and low maintenance costs you get glareless, softly diffused, high intensity lighting which speeds production. The following are a few of the many advantageous features: • Good Shielding • Excellent Diffusion (no sharp shadows) • Efficient Distribution • Elimination of Reflected Glare • Easy to Clean • Easy to Relamp • No Parts to Get Broken or Lost • Low Cost.

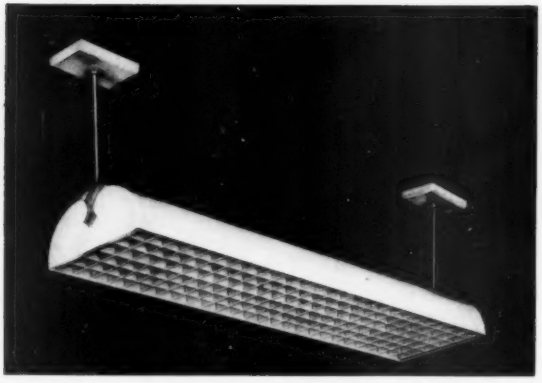


SILVRAY SPEEDLIGHT

SILVRAY FIXTURES FOR OFFICES AND DRAFTING ROOMS

Efficient production in the factory depends on efficient production in office and drafting room. Silvray incandescent luminaires with silvered bowl lamps and Silvrescent fluorescent luminaires are providing high intensity light for seeing for a distinguished roster of the largest industrials in the country.

Indirect lighting systems using Silvered bowl incandescent lamps provide maximum eye comfort for sustained office work. The Sealed Reflector is an integral part of the silvered bowl. It cannot be reached by dust, dirt or corrosive vapors. A new lamp restores the fixture to initial efficiency.



THE 222 luminaire is establishing new standards in fluorescent fixture design. Its rugged, all metal construction and die formed precision components insure long trouble-free service under severest industrial conditions. The louver has a unique new latch which permits it to hinge at either side or be completely removed in an instant.

THE 1500 LINE: The Silvray 1500 line is distinguished by its functional simplicity—No horizontal surfaces to collect dirt. Relamps from below without removing any fixture parts and replacing the lamp restores fixtures to initial efficiency.

INTEGRATED LIGHT CONTROL

Light source and light control are integrated in the "sealed reflector" system of the Silvered Bowl Lamp. A coating of pure silver deposited on the bulb and permanently sealed to it keeps dust and dirt away from the reflector. This is the key to Silvray's outstanding efficiency in incandescent lighting.

SILVRAY LIGHTING INC.

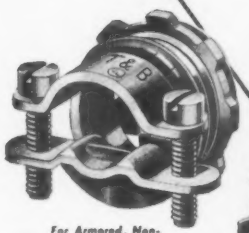
OFFICE: RKO Bldg., Radio City, New York, N. Y.
FACTORY: Bound Brook, New Jersey

DISTRIBUTED BY GRAYBAR

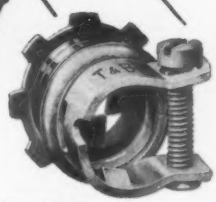
...the best of everything electrical

all NEW T & B CONNECTORS

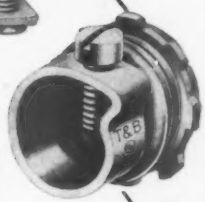
all (UL) Approved



For Armored, Non-Metallic or Service Entrance Cable and Flexible Conduit.
Catalogue No. 3301



For Armored Cable and Flexible Conduit.
Catalogue No. 253



For Flexible Conduit and Armored Cable.
Catalogue No. 240

For Armored Cable and Non-Metallic Sheathed Cable.
Catalogue No. 3101

For Armored Cable and Flexible Conduit.
Catalogue No. 300

DESIGN

Entire T&B line has been completely redesigned since war to accommodate entire expanded range of old and new cables, and meet requirements peculiar to every type of cable.

MATERIAL

Entire line is now made of heavy-gauge steel for exceptional strength, uniform quality, full salvage value. No burrs, gate-marks, flaws, blow-holes or embrittlement in these fittings.

PERFORMANCE

Each connector designed to meet the specific requirements of specific installation problems. Precision engineered to make up tight, grip securely and to prevent cable injury.

PRODUCTION

Entire line produced on brand new batteries of most modern, high-speed automatic machinery insuring accuracy of manufacture, extraordinary production capacity. We have them now!

Here they are . . . the *only* completely redesigned, modernized post-war line of connectors on the market! Every one of them is designed to do a specific job more efficiently, more economically. Every one is made of uniform quality, heavy-gauge steel. Every one of them is produced on T&B's superlative new high-speed, automatic machinery. If you need connectors . . . T&B has them; if you want top quality . . . the T&B trade mark is your guarantee that you have the best in the field today.

T&B ENGINEERED

T & B Products Sold Only Through The T & B Electrical Wholesaler

THE THOMAS & BETTS CO.
INCORPORATED
ELIZABETH 1, NEW JERSEY

The best of everything electrical . . . via GraybaR

Looking for a way to . . .

- ☐ Increase production?
- ☐ Reduce spoilage?
- ☐ Improve your safety record?
- ☐ Minimize personnel turnover?
- ☐ Cut operating costs?

Check all five when you modernize your plant with

DAY-LINE* industrial fluorescent lighting fixtures

UP! UP! UP! Yes, production goes up when Day-Line fixtures go up. Planned Day-Line fluorescent lighting provides easier, more accurate vision, eliminates fatigue due to eyestrain. Result: Less spoilage, more economical operation, greater profits. And two plus values: fewer accidents . . . and less turnover in personnel because your plant is a bright, cheery place in which to work.

RUGGED and trouble-free! Day-Line heavy gauge steel channels are engineered for *extra* strength. Reflectors are finished in porcelain enamel to furnish a high reflection factor. Turret* sockets assure simple, quick lamp mounting. Reflectors can be completely removed for cleaning and servicing in less than a minute . . . no tools required. It's Day-Line for *long life . . . easy maintenance!*

There is a Day-Brite representative near you to help you engineer your plant lighting for maximum efficiency. Ask him for his help; there's no obligation. And write now for Bulletin 30-A-2, for complete details of Day-Line fixtures.

Day-Brite Lighting, Inc., 5441 Bulwer Avenue, St. Louis 7, Mo.
In Canada: Amalgamated Electric Corp., Ltd., Toronto 6, Ontario

*T.M. Reg. U.S. Pat. Off.
U.S. Patent Nos. 2317434, D-135375 and D-133458.

179

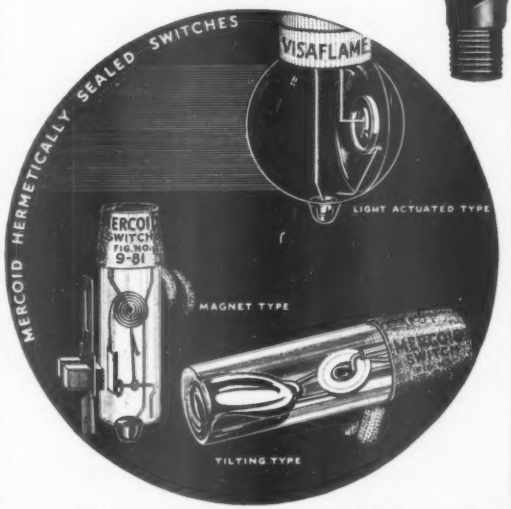
IT'S EASY TO SEE WHEN IT'S

DAY-BRITE *Lighting*

. . . the best of everything electrical

AIR CONDITIONING CONTROLS ☆ COMBINATION PRESSURE AND LOW WATER ☆ BOILER FEED WATER PUMP CONTROLS

MERCOID



A FAMILIAR CONTROL

The "familiar" DA type control shown above, is a favorite with industry. The outside double adjustment feature and direct reading simplifies the setting and eliminates all guesswork, an important factor considering new help in all plants.

All Mercoid Controls are equipped exclusively with hermetically sealed corrosion-proof mercury switches, thus assuring positive operation and longer control life. Mercoid mercury switches are available to the trade for a variety of applications. A few types are illustrated to the left.

If you have a control problem involving the automatic control of pressure, temperature, liquid level, mechanical operations, etc., it will pay you to consult Mercoid's engineering staff—always at your service.

WRITE FOR MERCOID CATALOG NO. 600, IT CONTAINS A LOT OF CONTROL INFORMATION

The Only 100% Mercury Switch Equipped Controls

THE MERCOID CORPORATION
4201 W. BELMONT AVENUE, CHICAGO, ILLINOIS

☆ OIL BURNER CONTROLS ☆ OVEN TEMPERATURE CONTROLS ☆ LIMIT CONTROLS ☆ REFRIGERATION CONTROLS ☆ VISAFLAME (LIGHT OPERATED CONTROL) ☆

☆ EXPLOSION-PROOF CONTROLS ☆ FLOAT CONTROLS ☆ GAS PILOT CONTROLS ☆ MERCURY SWITCHES ☆ LIQUID LEVEL CONTROLS ☆ UNIT HEATER CONTROLS ☆

STOKER CONTROLS ☆ THERMOSTATS ☆ VAPOR VACUUM CONTROLS ☆ TRANSFORMER-RELAYS ☆ LEVER ARM CONTROLS

The best of everything electrical . . . via GraybaR

plus- "[redacted]" POWER to do the job better

IDEAL HEAVY-DUTY CLEANER

and-

For Light-Duty Jobs,
THE NEW
IDEAL Light-Duty
"Hand-Type" Cleaner
$49.50

Latest addition to the IDEAL Cleaner family. The perfect cleaner for all light duty work—at a very low price. Blows, sprays, vacuums, dries. Same rugged stamina as the Heavy and Medium-Duty Models. Continuous-duty, ½ HP motor. Weighs only 8½ pounds without cord—a woman can use it continuously without undue fatigue.

With a single 4-in-1 IDEAL Heavy-Duty Cleaner you can vacuum clean, blow, spray or dry—and save money every time you do it! Planned and built to out-work and out-perform every other cleaner, it quickly pays for itself, leaves you years of service that cost you little or nothing. It is the most powerful "hand-type" cleaner made, yet it only weighs 14½ pounds. Continuous-duty 1-1/3 HP motor blows air at a velocity of *26,500 feet per minute*—to blast out dirt and grit that ordinary cleaners don't touch . . . Or, used as a vacuum, its tremendous suction (52" waterlift) picks up scraps of wood, paper, bench litter at a single pass, leaves everything spic-and-span. Dozens of money saving uses include spraying paint, lacquer, varnish—drying ink, paint or electrical equipment—keeping machinery dirt and grit-free for longer life . . . Get the proof that the IDEAL Heavy-Duty gives you more of everything you need in a cleaner. Ask your IDEAL Distributor for a FREE DEMONSTRATION in your own plant.

MEDIUM-DUTY MODEL also available. 2/3 Horsepower Cleaner that weighs only 9½ pounds. Ideal for jobs where the great power of the Heavy-Duty Model is not required.

IDEAL INDUSTRIES Inc., SYCAMORE, ILLINOIS

. . . the best of everything electrical

A New Advancement in the

MOST MODERN WAY of FACTORY LIGHTING

more LIGHT with greater *Brightness Control!*

A New Aid to Better Work, Fewer Accidents, Happier Employees, Through Better Seeing Conditions

Comfortable Seeing Conditions require that adequate Brightness Control must accompany the higher levels of illumination now being demanded by industry. Latest development in the solution of this problem is Longitudinal Shielding which is a feature now available in the Benjamin Twin Lamp Lite-Line System.

Placed between the lamps, this shield provides an additional 14 degree zone of shielding at the workers' eye levels. It minimizes glare without materially affecting the effective illumination on vertical and horizontal working areas.

There are many other refinements in "Lite-Line 40" design and construction which safeguard against energy wasting glare. Among them are the light diffusing Porcelain Enamel reflecting surfaces and the design of the reflector contour. These help make possible the attainment and maintenance of higher levels of illumination with greater seeing comfort.

3039C

BENJAMIN TRADE MARK

"Lite-Line 40" R.L.M.

SYSTEM OF FLUORESCENT LIGHTING

DISTRIBUTED EXCLUSIVELY BY ELECTRICAL WHOLESALERS

FREE DATA BULLETIN

BENJAMIN ELECTRIC MFG. CO., Dept. N, Des Plaines, Illinois
Without cost or obligation, please send Lite-Line Data Bulletin "LS"

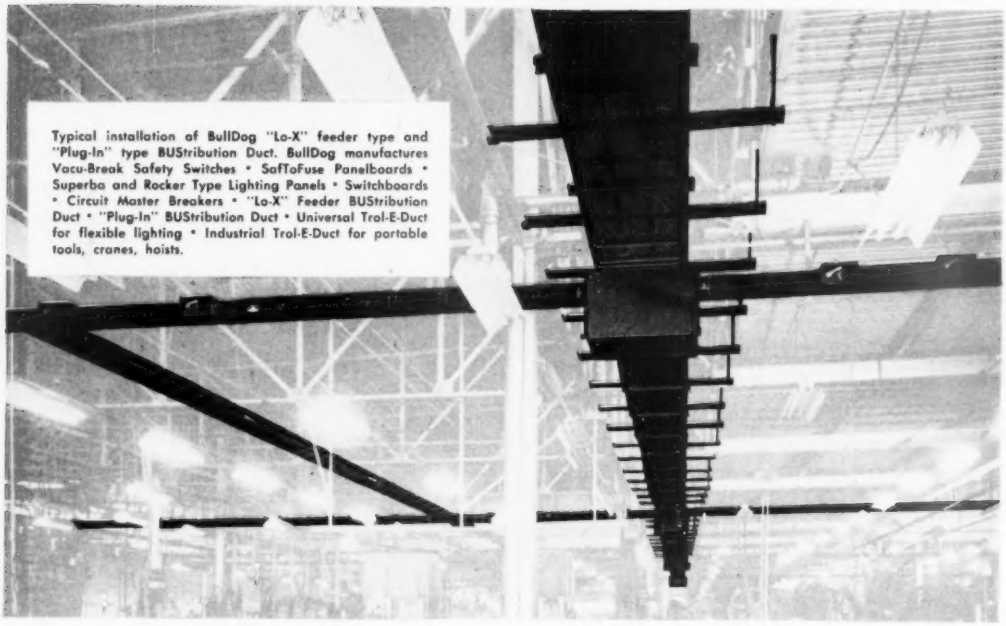
Name_____ Title_____

Firm_____

Address_____

City_____ State_____

The best of everything electrical . . . via GraybaR



Typical installation of BullDog "Lo-X" feeder type and "Plug-In" type BUStribution Duct. BullDog manufactures Vacu-Break Safety Switches • SafToFuse Panelboards • Superba and Rocker Type Lighting Panels • Switchboards • Circuit Master Breakers • "Lo-X" Feeder BUStribution Duct • "Plug-In" BUStribution Duct • Universal Trol-E-Duct for flexible lighting • Industrial Trol-E-Duct for portable tools, cranes, hoists.

Power with a foolproof future

CAN you foresee the many changes which may come to your plant in the next five or ten years?

Naturally not! But when it comes to electrical power distribution, BullDog BUStribution systems offer flexibility to meet any change the future holds.

Take machine layout changes: With BullDog "Plug-In" BUStribution Duct, moving machinery is like moving household appliances—simply unplug machine from duct, move, and plug in at new location.

If necessary, your entire BUStribution system can be easily and quickly dismantled, moved, and set up . . . without scrapping a nut or bolt—it's flexible and salvable.

BullDog "Lo-X" BUStribution Duct, for secondary feeders, is prefabricated to exact performance standards. Ventilated construction and paired-phase arrangement of silvered-copper bus bars reduces temperature rise, assures high current-carrying capacity and reduces reactive voltage drop. BUStribution Duct is sturdily built for years of finest service.

Your local BullDog Field Engineer will be glad to show you a BullDog BUStribution system in your own neighborhood. Let him look over your requirements and answer your questions.

BullDog's Field Engineers welcome the opportunity to sit in with you during the early planning stages of a building project. Their knowledge of electrical distribution layout can mean savings in installation costs, as well as efficiency and reliability in actual operation. Why not take advantage of this service?

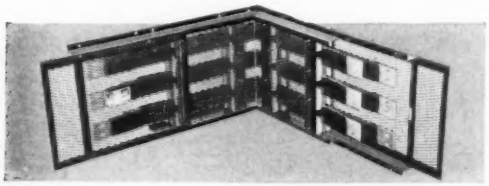
BULLDOG ELECTRIC PRODUCTS COMPANY

DETROIT 32, MICHIGAN • FIELD OFFICES IN ALL PRINCIPAL CITIES

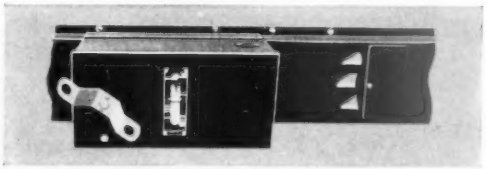
IN CANADA: BULLDOG ELECTRIC PRODUCTS OF CANADA, LTD., TORONTO

BULLDOG

HEADQUARTERS FOR ELECTRICAL DISTRIBUTION



Section of "Lo-X" BUStribution Feeder Duct, used for main secondary power feed. "Lo-X" Duct is prefabricated in ten-foot lengths, in capacities from 600 Amps. to 4000 Amps., 600 Volts or less. Close spacing and paired-phase arrangement of bus bars reduces reactive voltage drop.



Section of "Plug-In" Duct, showing Vacu-Break Bus Plug for tap-off purposes. Crescent-shaped openings make it impossible to insert plugs incorrectly. Each ten-foot section of "Plug-In" Duct has ten such openings. Capacities: 200 Amps. to 1350 Amps., 600 Volts or less.

. . . the best of everything electrical

Thor

MOST POWERFUL EVER BUILT!

Silver Line
ELECTRIC
IMPACT WRENCH

AMAZING ALL-PURPOSE IMPACT TOOL FOR SCORES OF JOBS!

For complete information about this great new Thor Silver Line ⅜" Electric Impact Wrench . . . including data on the scores of accessories that can be used with it . . . see your Thor distributor or write for Circular 1025.

INDEPENDENT PNEUMATIC TOOL COMPANY
Aurora, Illinois
Export Division: 330 West 42nd Street, New York 18, N. Y.
Birmingham Boston Buffalo Chicago Cincinnati Cleveland Denver
Detroit Houston Los Angeles Milwaukee New York Philadelphia
Pittsburgh St. Louis St. Paul Salt Lake City Seattle
San Francisco Toronto, Canada Sao Paulo, Brazil London, England

Thor PORTABLE POWER TOOLS

PNEUMATIC TOOLS • UNIVERSAL AND HIGH FREQUENCY ELECTRIC TOOLS • MINING AND CONTRACTORS TOOLS

The best of everything electrical . . . via GraybaR

New! Instant-starting

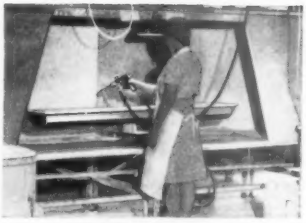
slimline fixtures

with wiring channels as well as reflectors available in Vitreous Porcelain Enamel

● Take a look at Wheeler Slimline Fixtures and you'll see the extra advantages that assure lowest cost in the long run. In addition to the benefits of instant-starting, you get the advantages of Wheeler "Skilled Lighting" design and construction . . . stable reflecting characteristics, easy cleaning, lower maintenance and extra-long service life. These inherent Wheeler features are the results of nearly 70 years of making quality lighting equipment.

Typical of Wheeler engineering thoroughness in Slimline Units is the exclusive auxiliary lamp support at center of fixture to prevent vibration of the 8-foot lamps. Fixture channel is in one sturdy piece . . . available in either baked enamel or porcelain enamel finish. Reflectors are in vitreous porcelain enamel finish only.

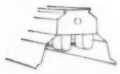
Two types of Slimline fixtures represent another Wheeler "Skilled Lighting" refinement. Each is designed for specific applications. Get all the facts on these latest products of Wheeler "Skilled Lighting". Write to **Wheeler Reflector Company, 275 Congress St., Boston 10, Massachusetts.**



NEARLY 70 YEARS OF "Skilled Lighting" Tradition

Here is one of Wheeler's many veteran workers . . . skillfully applying Wheeler's famous wear-resistant vitreous porcelain enamel surface to the inside of a reflector. Through her faithful adherence to high quality standards, she helps to maintain the distinguished Wheeler tradition of top value in modern industrial lighting.

See all our new 1949 units at Booth Nos. 63 and 64 at the International Lighting Exposition.



Industrial Slimline Unit End view of Industrial Type unit showing flat top. These units are designed for general industrial use under normal atmospheric conditions.

Textile Slimline Unit End view of Textile Type unit showing pecked top especially designed to eliminate frequent cleanings and danger of moisture damage.

Distributed Exclusively through Electrical Wholesalers

Wheeler REFLECTORS

SKILLED LIGHTING

MADE BY SPECIALISTS IN LIGHTING EQUIPMENT SINCE 1881

. . . the best of everything electrical

MODERNIZE

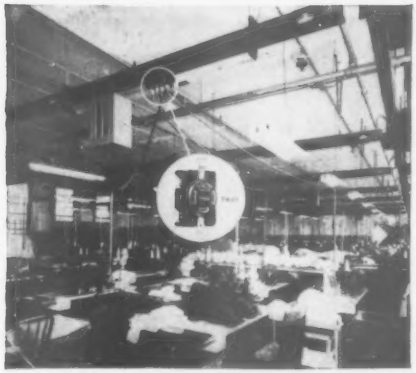
WITH

HUBBELL

Twist-Lock

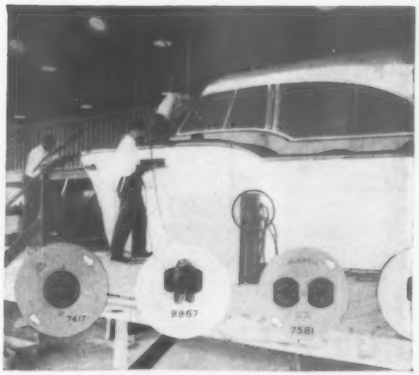
3-WIRE OR 4-WIRE
POLARIZED LOCKING CONNECTORS

• • •



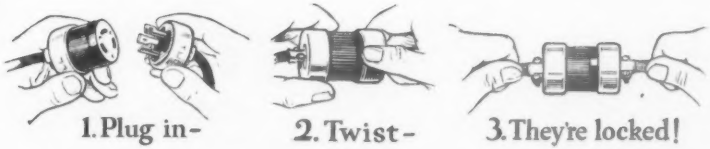
TWIST-LOCKS USED IN LARGE SHIRT FACTORY TO CONNECT SEWING MACHINES TO BUS-DUCT SYSTEM

Twist-Lock **Connecting Devices are widely used by industries *wherever lock-fast electrical connections are needed* to insure safe, uninterrupted production. Available grounded for safe operation.**



USING 4-WIRE GROUNDED TWIST-LOCKS FOR HIGH CYCLE TOOLS AND 3-WIRE TWIST-LOCKS FOR SINGLE-PHASE TOOLS IN CABIN CRUISER PRODUCTION LINE

Twist-Lock **Devices eliminate time-losses and annoying delays because they "stay put" — are vibration-proof — assure a lockfast electrical connection under all conditions.**



1. Plug in– 2. Twist– 3. They're locked!

HARVEY HUBBELL, Inc. HUBBELL BRIDGEPORT, CONN.

The best of everything electrical . . . *via* GraybaR

"We Were Able To *Increase* The *Load* On A Bus Duct Without Changing Fuse Holders"

"In May, 1945, we moved considerable electrical equipment from a plant in Buffalo to a new plant at Niagara Falls. Several runs of bus duct were moved and installed with some load added.

"The fusible swing-out plugs in the bus duct system were 60 ampere capacity. It was soon found that 60 ampere ordinary fuses would not handle the starting surges or other temporary overloads caused by the additional equipment on the circuit.

"Our Electrical Engineer suggested Fusetron dual-element fuses. The troublesome, needless blows were stopped immediately.

"The Fusetron fuses permitted all machines to be kept in operation without any change in the size of the fuse holders."

Ferguson Electric Construction Co.,
Buffalo, N. Y.
C. P. Wachtel, Vice President

Simply by Installing

Facts About FUSETRON Dual-Element FUSES

The fuse link element opens on short-circuit — the thermal cutout element protects on overloads — the result, a fuse with tremendous time-lag and much less electrical resistance.

They have the same degree of Underwriters' Laboratories approval for both motor-running and circuit protection as the most expensive devices made.

Made to the same dimensions as ordinary fuses — fit all standard fuse holders.

Obtainable in all sizes from 1/10 to 600 ampere, both 250 and 600 volt types. Also in plug types for 125 volt circuits.

Their cost is surprisingly low.

FUSETRON is a trade mark of the Bussmann Mfg. Co., Division of McGraw Electric Co.

...the best of everything electrical

Fusetron DUAL-ELEMENT Fuses

with their

10 Point Protection

1. Protect against short-circuits.
2. Protect against needless blows caused by harmless overloads.
3. Protect against needless blows caused by excessive heating — lesser resistance results in cooler operation.
4. Provide thermal protection — for panels and switches against damage from heating due to poor contact.
5. Protect motors against burnout from overloading.
6. Protect motors against burnout due to single phasing.
7. Give DOUBLE burnout protection to large motors — without extra cost.
8. Make protection of small motors simple and inexpensive.
9. Protect against waste of space and money — permit use of proper size switches and panels.
10. Protect coils, transformers and solenoids against burnout.

Stop Wasting Time and Money —

FUSETRON
TRUSTWORTHY NAMES IN ELECTRICAL PROTECTION
BUSS

FUSETRON Dual-Element Fuses Give ALL-PURPOSE PROTECTION

One needless shutdown — or one lost motor — or one destroyed switch or panel — may cost you far more than replacing every ordinary fuse with a FUSETRON Dual-Element fuse.

Don't risk such losses — protect yourself by installing a FUSETRON Dual-Element fuse in every set of fuse clips throughout the entire electrical system.

Bussmann Mfg. Co., University at Jefferson
St. Louis 7, Mo. (Division McGraw Electric Co.)

Please send me complete facts about Fusetron Dual-Element Fuses.

Name _____

Title _____

Company _____

Address _____

City & Zone _____ *State* _____ 349

The best of everything electrical . . . via GraybaR

Leader Luminaires light the way for INDUSTRY

● Industry's need for maximum production per individual worker never was greater than in these days of high material and man-power costs. *Good lighting speeds up output.* LEADER super-efficient designs in fluorescent fixtures are aids in industry's drive to lessen costs.

Overhead is Less when LEADER Lights are Overhead!

Leader STRATOLINER Fluorescent Fixture Model IUO 240

Reflectors open or closed. A unit that provides extra-light intensity. Highly efficient, heavy-duty all-steel construction. For direct-to-ceiling or suspension mounting, individually or in continuous rows. Equipped with Snap-Lock turret sockets. Takes two or three 40-watt, T-12 lamps. Conventional 110-125 volt, 60 cycle A.C. only. (Other voltages and frequencies available).

Leader ZEPHYRLITE Fluorescent Fixture Model ZUO 240

A popular-priced fixture for industrial lighting. Uses two 40-watt fluorescent lamps. For direct-to-ceiling or suspension mounting. Equipped with Snap-Lock turret sockets. 110-125 volt, 60 cycle A.C. (Other voltages and frequencies available).

Each Snap-Lock turret is under spring tension. It compresses under pressure; then snaps back into normal position.

LEADER SNAP-LOCK TURRET SOCKET

Easy - Positive - Quick Change

Time means money. The SNAP-LOCK Turret SOCKET saves time when replacing lamps. Simply depress turret with lamp end and slip leads into place. Turret springs back and holds tube (on both ends of fixture) in a secure, spring-pressure grip. Available in three and two lamp styles. Fits all LEADER 40-watt fixtures.

Better wholesalers carry LEADER fixtures. There is a LEADER representative in your area. His name, plus fixture data, sent on request.

LEADER ELECTRIC COMPANY

3500 NORTH KEDZIE AVE. • CHICAGO 18, ILLINOIS

WEST COAST FACTORY • 2040 LIVINGSTON • OAKLAND 6, CALIFORNIA

...the best of everything electrical

CUT Plant Rearrangement Costs

with

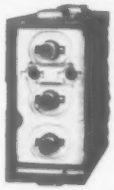
SQUARE D's PLUG-IN DUCT

Production capability of the modern plant is directly related to arrangement of machinery and equipment. Rearrangement may be necessary to take full advantage of an improved process or to permit economical manufacture of a new product.

PLUG-IN DUCT can be installed with a minimum of delay and expense near ceilings, along walls, or directly above machinery to provide power where it is needed. It replaces the more conventional panelboards, which have conduit-enclosed feeders, typical of less modern installations.

DUCT EQUIPMENT and other Square D products are distributed by GRAYBAR

GET THESE FEATURES



Round Copper Bus Bars provide greater mechanical strength and resistance to short-circuit stresses. Supports are non-carbonizing porcelain.

Plug-in Units of either circuit breaker or fusible switch types are easily installed at 2-foot intervals along both sides of the duct. Plug-in stabs grip the round bus bars with exceptionally high pressure. A hook-type bracket permits rotation of the unit into place. A single clamp screw at bottom holds it there.

Hanger Brackets of heavy gauge steel are two-piece construction to facilitate assembly around duct enclosure. They are suitable for either edgewise or flat mounting of duct structure.

Flexible Connectors of laminated copper join bus bars between sections to provide for expansion and contraction, permit proper alignment and insure tight joints. All bolt heads face outward.

SQUARE D COMPANY

DETROIT • MILWAUKEE • LOS ANGELES

SQUARE D COMPANY CANADA LTD., TORONTO • SQUARE D de MEXICO, S. A., MEXICO CITY, D. F.

The best of everything electrical . . . via GraybaR

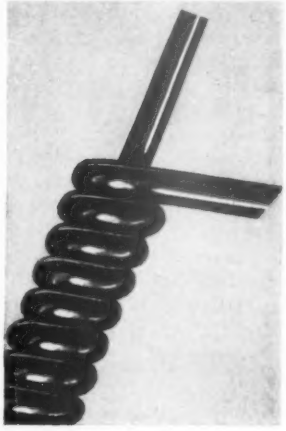
TRY ITS ABRASION RESISTANCE, to learn how tough an insulation is. Roevar Magnet Wire shows a three-to-one advantage over standard enameled wires. And such superiority makes Roevar wire your first choice for high-speed winding operations.

Besides its strength and toughness, Roevar Magnet Wire insulation has high dielectric qualities, is extremely flexible, and has exceptional resistance to solvents used in coil-treating varnishes. Importantly, too, Roevar Wire costs less and is of smaller diameter than magnet wire with paper, cotton or silk insulation. It is furnished in sizes No. 14 to 40 A.W.G.

Roebling engineers are anxious to cooperate with you, in helping determine where Roevar Magnet Wire can be used most effectively and to assure best results. Write for full information and samples of the wire.

JOHN A. ROEBLING'S SONS COMPANY
TRENTON 2, NEW JERSEY
Branches and Warehouses in Principal Cities

Test shows Roevar Magnet Wire (magnified) wrapped on its own diameter, without appreciable loss in dielectric strength.



★ *WIRE ROPE AND STRAND* ★ *FITTINGS* ★ *SLINGS* ★ *SUSPENSION BRIDGES AND CABLES* ★ *AIRCORD, AIRCORD TERMINALS AND AIR CONTROLS* ★ *AERIAL WIRE ROPE SYSTEMS* ★ *ELECTRICAL WIRE AND CABLE* ★ *SKI LIFTS* ★ *HARD, ANNEALED OR TEMPERED HIGH AND LOW CARBON FINE AND SPECIALTY WIRE, FLAT WIRE, COLD ROLLED STRIP AND COLD ROLLED SPRING STEEL* ★ *SCREEN, HARDWARE AND INDUSTRIAL WIRE CLOTH* ★ *LAWN MOWERS*

ROEBLING

A CENTURY OF CONFIDENCE

JR ROEBLING

...the best of everything electrical

COSTS GO DOWN

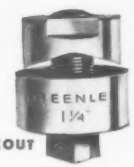
WITH TIMESAVING GREENLEE TOOLS ON THE JOB . . .

HYDRAULIC BENDER FOR FAST FORMING OF CONDUIT, PIPE, TUBING

Owners of GREENLEE Hydraulic Benders, such as shown above, often report labor and material savings enough on *a single conduit installation* to repay the entire cost of the tool.

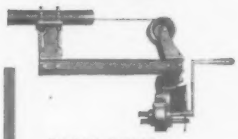
For, with this compact, portable bending unit, *one man* in but a few minutes makes smooth, precise bends in pipe up to 4½," rigid and thin-wall conduit, tubing, bus-bars.

Users say this saves 50% to 90% in labor compared with old methods and eliminates the need for many manufactured bends and fittings. See your electrical distributor today for complete facts on time and material saving GREENLEE Hydraulic Benders.



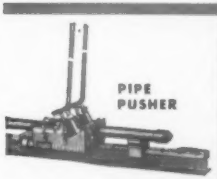
KNOCKOUT TOOLS

In 1½ minutes or less cut smooth openings up to 3½" in metal, hard rubber, or bakelite up to ½" thick. Turned with wrench. Eliminate drilling and filing.



CABLE PULLER

Easy-operating, compact unit for 7,500 pound pull. Fastens direct to conduit for pulling in line with conduit . . . no loosened hangers. Attachment available for concealed conduit work.



PIPE PUSHER

Pushes pipe under streets, railroads, floors, and other obstacles. Eliminates tearing up, back-filling, re-paving. No. 790 for pipe up to 4"; No. 795 for larger pipe and ducts.

HAND BENDER

Quickly makes small-radius bends in steel, copper, brass and aluminum tubing, conduit, or pipe . . . without kinks or flattening. Especially designed to make neat bends up to 180° for sharp nooks and corners.

ASK YOUR ELECTRICAL DISTRIBUTOR for information on timesaving GREENLEE tools or write Greenlee Tool Co., 1964 Herbert Ave., Rockford, Ill. The GREENLEE line also includes Joist Borers • Radio Chassis Punches Electricians' Bits • Expansive Bits • Bit Extensions • Bell Hangers' Drills.

TOOLS FOR CRAFTSMEN

GREENLEE

The best of everything electrical . . . via GraybaR

Stick to STICKA FRICTION TAPE

MADE BY BWH, WORLD'S LARGEST FRICTION TAPE MANUFACTURER

Backed by two famous names . . . Graybar and Boston Woven Hose & Rubber Company . . . Sticka Friction Tape is preferred by big industry and careful workers everywhere. It grabs tight, holds fast, doesn't ravel or buckle, ages well. Keep your stocks complete on all packages to meet steady demand.

★ 4 DIFFERENT PACKAGES ★

CONVENIENT CONTAINERS

No. 1 (shown) Colorful space-saving container with 32 No. 1 individual, cellophane-wrapped cartons. 24 containers (768 rolls) per case.

No. 2 (not shown) Same type container, with 24 No. 2 individual, cellophane-wrapped cartons. 16 containers (384 rolls) per case.

POPULAR No. 4 — 102 individual cellophane-wrapped cartons per case. No display container.

SHOP PACKAGE — For garages, electrical shops, etc. Makes stock control easy. 10 rolls of ¾" tape, separated with wax paper. 10 shop packages, (100 rolls) per case.

OTHER FAMOUS GRAYBAR FAST SELLERS

AMAZON A.S.T.M. FRICTION TAPE — meets A.S.T.M. and Government specification HH-T-101A
AMAZON A.S.T.M. SPLICING COMPOUND — meets A.S.T.M. and Government specification HH-T-111C
VICTOR FRICTION TAPE — high grade, for general use. VICTOR SPLICING COMPOUND, withstands dielectric tests at least 300 volts per mil thickness.
Packed 96 Individual Cellophane-Wrapped Cartons Per Case

. . . the best of everything electrical

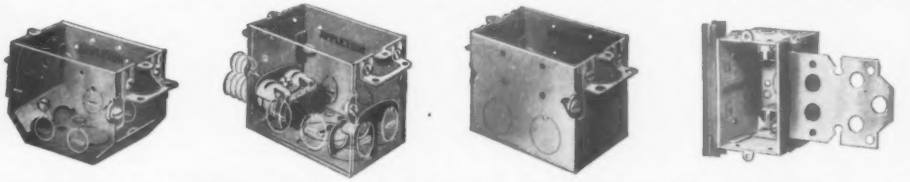
Complete APPLETON Line

Solves 15,000 wiring problems

FOR EXAMPLE

3¼ AND 4 INCH OCTAGONAL BOXES—4 AND 4 11/16 INCH SQUARE BOXES—WIDE SELECTION OF COVERS

FOR EXAMPLE



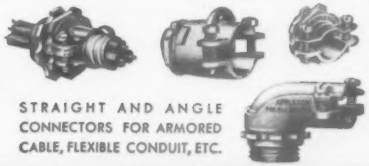
SWITCH BOXES, VARIOUS DEPTHS, WITH OR WITHOUT CLAMPS AND BRACKETS

FOR EXAMPLE

COUPLINGS AND CONNECTORS, ENTRANCE FITTINGS, CLAMPS, ETC. FOR ELECTRICAL METALLIC TUBING

FOR EXAMPLE

COUPLINGS, CONNECTORS, CLAMPS AND ENTRANCE FITTINGS FOR RIGID CONDUIT.



STRAIGHT AND ANGLE CONNECTORS FOR ARMORED CABLE, FLEXIBLE CONDUIT, ETC.

ID TODAY for big Apple- Catalog, listing and cribing the more than 000 items in the Com- te Appleton Line. Glad- ailed on request to any r of electrical fittings.

"Standard for Better Wiring"

Completeness of the Appleton Line is outstanding . . . just as expert design and precision manufacture are outstanding qualities of all the more than 15,000 items Appleton makes.

The products illustrated above are examples—products from Appleton's own foundries and fabricating plants, skilfully designed by Appleton engineers, and recognized throughout the electrical industry as "STANDARD FOR BETTER WIRING."

In the COMPLETE APPLETON LINE is every fitting required for every job. That means selection is simplified . . . work goes more smoothly because the correct fitting for every turn and terminal is ready when you want it. Have the backing of the complete Appleton line, of superior Appleton design, and sturdy, dependable Appleton quality. Specify Appleton fittings, for every job.

SOLD THROUGH ELECTRICAL WHOLESALERS

APPLETON ELECTRIC COMPANY

1715 WELLINGTON AVENUE • CHICAGO 13, ILLINOIS

Branch Offices: NEW YORK, 50 Church St. • DETROIT, 3049 E. Grand Blvd. • CLEVELAND, 1836 Euclid Avenue • SAN FRANCISCO, 655 Minna St. • ST. LOUIS, 420 Frisco Bldg. • LOS ANGELES, 100 N. Santa Fe Avenue • ATLANTA, 724 Boulevard N.E. • BIRMINGHAM, 429 Brown Marx Bldg. • MINNEAPOLIS, 305 Fifth St. S. • PITTSBURGH, 414 Bessemer Bldg. • BALTIMORE, 100 East Pleasant St. • BOSTON, 10 High Street • DENVER, 1509 Seventeenth Street • PHILADELPHIA, 1017 Cherry Street

Resident Representatives:
Cincinnati, Dallas, Houston, Indianapolis, Kansas City, Milwaukee, Seattle

Export Representatives:
International Standard Electric Corp., 67 Broad St., New York 4, N. Y.

CONDUIT FITTINGS • REELITES
LIGHTING EQUIPMENT

APPLETON

OUTLET AND SWITCH BOXES
EXPLOSION-PROOF FITTINGS

The best of everything electrical . . . *via* GraybaR

MUTUAL ENDORSEMENT

- BARE WIRES AND CABLES
- OK*—PEERLESS*—TIP-TOP* WEATHERPROOF WIRES
- GUARDIAN* BUILDING WIRES AND CABLES—THERMOPLASTIC AND RUBBER INSULATED
- ROMEX* AND ROMEX-T. NON-METALLIC SHEATHED CABLES
- VARNISHED CAMBRIC POWER AND CONTROL CABLES, THERMOPLASTIC AND THERMOSETTING JACKETED, BRAIDED, OR LEAD SHEATHED
- ASBESTOS AND ASBESTOS VARNISHED CAMBRIC WIRES AND CABLES
- SUPER SERVICE S* AND OTHER PORTABLE CORDS AND CABLES
- MAGNET WIRE OF ALL TYPES

IN PROCUREMENT... Two fundamentals apply, always. 1. Pick yourself a reliable source of supply. 2. Specify a definite manufacturer's product, for quality's sake...This page displays two names to which you can pin your faith, under all circumstances. Everything you need is there—modern-specification insulation; quality-guaranteed construction; intelligent, cooperative service—"MORE POWER TO YOU".

GENERAL CABLE
CORPORATION

OFFICES IN PRINCIPAL CITIES

*TRADE MARK REG. U.S. PAT. OFF.

...the best of everything electrical

WHEN TIME IS MONEY . . . use COFFING HOISTS

TO LIFT . . . TO PULL . . . TO STRETCH

Inadequate hoisting equipment overcharges you on the time sheet. With an efficient, easy-to-use and safe Coffing Hoist on the job you'll find yourself ahead time and again, in money and manpower. Check the complete Coffing line for the hoist you need.

the New "MIGHTY-MIDGET" PULLER

A mite for size but mighty in power is this new 6½ lb. puller that has a rated capacity of *500 pounds!* Maintenance and construction men like it because it's *light*, yet versatile enough to handle scores of lifting or pulling jobs . . . plus pulling wire and raising cable.

Two-way handle serves as a lever or high speed crank. Tested to 50% over capacity; equipped with "safety-load" handle that will bend before any other part of the puller will give.

the New HOIST-JACK

IT'S A HOIST! IT'S A JACK! IT'S A LOAD BINDER!

Just introduced, this versatile new 3-in-1 tool serves as a hoist, as a jack or as a load binder! It's helping users in many fields to set new efficiency standards on lifting, pulling or stretching jobs. Lifts heavy machinery, cars or trucks. Pulls wire or posts . . . scores of other uses. Simplicity in design and construction make it easy and safe to operate.

2000 pound capacity, safety tested to 100% overload. "Safety-Load" handle will bend before any other part will give. Operates on stand as shown, or without stand. Set up in a few seconds; easily portable. Weighs only 23 pounds.

THE COMPLETE COFFING LINE ALSO INCLUDES
DIFFERENTIAL CHAIN HOISTS • I-BEAM TROLLEYS
UTILITY MAINTENANCE TOOLS

Illustrated bulletins available for these as well as all Coffing Hoists pictured on this page. Write:

COFFING HOIST COMPANY
DANVILLE • ILLINOIS

"SAFETY-PULL" RATCHET LEVER HOISTS

The all-purpose hoists for every lifting job. Single or double locking pawl construction. Load is always under control. "Safety-load" handle of malleable iron will bend before any other part of hoist gives. Every model tested to 100% overload. Nine models available with capacities ranging from ¾ to 15 tons. Standard lift 5 feet; chain may be added for longer lift if required.

SPUR GEARED CHAIN HOISTS

Both top and load hooks are drop forged, heat-treated steel. Extra heavy malleable iron crosshead permits rocking motion of hoist; heavy suspension plates provide support between top hook crosshead and load sheave. Automatic load brake holds load securely at any desired position. Available in seven models to handle from ½ to 5 tons.

"QUIK-LIFT" ELECTRIC HOISTS

Uses only a few cents worth of AC or DC current per day. Each model equipped with heavy duty motor, single or three phase. High starting torque. Pendant rope control gives lifting or lowering accuracy to the fraction of an inch. Large braking surface. Top and bottom hooks are drop forged alloy steel. Load chain is of high grade steel, electric welded, factory tested. Hook or lug suspension. Available in 17 models to handle from 500 to 4000 pounds at lifting speeds most suitable for your requirements.

The best of everything electrical . . . via Graybar

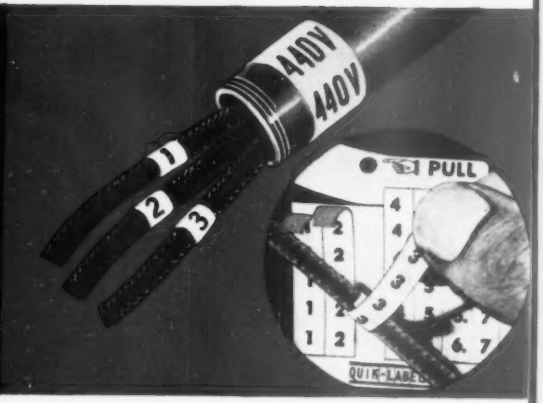
How do you mark your wires?

RINGING OUT?

CUTTING NOTCHES IN THE INSULATION?

TYING STRING TAGS?

OR



Compare QUIK-LABELS with *all* other Wire Marking Methods

	Brady QUIK-LABELS	Notches Cut in the Insulation	String Tags Tied on Wires	Metal Tags (Not Illustrated)
SELF-ADHESIVE	Yes	No	No	No
STAY ON WIRES WHEN PULLED THRU CONDUIT	Yes	Yes	No	No
ALL NEMA CODES AND SYMBOLS IN STOCK	Yes	No	No	No
READY TO USE PERMANENT	Yes	No	No	Yes
LEGIBILITY	Excellent	Poor	Fair	Poor
COST TO BUY	8 for 1c to 2 for 1c	Varies with Amount of Wire Wasted	10 for 1c to 1 for 1c	7 for 1c to 2c each
COST TO APPLY (At $2.00 per hour)	½c per label (maximum)	1c per notch	3c per tag	2c per tag

Save Time *and* Dollars

All Stock QUIK-LABELS are 1½" long for wires up to .500" O. D. We can cut them in half to make two rows of ¾" long labels as shown. This gives you *twice* as many labels on each card. *There is no charge for this service.* ¾" QUIK-LABELS mark all wires under .210" O. D. Ideal for flagging smaller wires too. Make Brady QUIK-LABELS your *Standard Wire Marking System.* Simplify buying and storing. Eliminate costly, obsolete methods. Brady ships same day from OVER 1,000 *DIFFERENT* QUIK-LABELS IN STOCK.

PIPE MARKERS

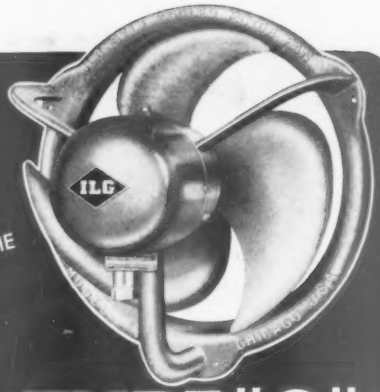
QUIK-LABEL Pipe Markers conform to Am. Stds. Assn. Pipe Identification System. Large letters on correct ASA background colors CAN BE READ UP TO 75 FEET. Stick without moistening. Write for Bulletin No. 135.

W. H. BRADY CO.

Manufacturers of Wire Markers and Other Self-sticking Tape Products

246 West Wells St., Milwaukee 3, Wis.

...the best of everything electrical

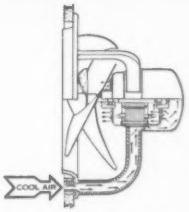


BIGGEST NEWS SINCE THE INVENTION OF THE SELF-COOLED MOTOR!

NEW TYPE "Q"
SELF-COOLED MOTOR PROPELLER FAN

ILG VENTILATION

It's NEW from motor cover to frame, yet it's proved in thousands of installations! Certified ratings testify to remarkable capacity. Decibel ratings vouch for amazingly quiet operation. All ILG's famous features for high efficiency, power-saving economy, minimum maintenance and long life are built in. Now available in all sizes up to and including 30" fan wheels. Hurry—get the complete story in ILG Catalog No. 148 —send coupon or phone nearby Branch Office (consult classified directory).



Specify the Self-Cooled Motor — it's exclusive, patented, ILG-built. Designed specifically for exhaust fan duty. Motor never "gums-up" from contact with foul air, requires minimum maintenance, adds to long life of entire unit.

ILG ELECTRIC VENTILATING CO., 2865 N. Crawford Ave., Chicago 41, Ill. Offices in more than 40 Principal Cities

Distributed by GraybaR ELECTRIC COMPANY

CALL NEAREST GRAYBAR BRANCH

...for data and prices on new ILG Self-Cooled Motor Propeller Fans. Get quick delivery from Graybar warehouse stocks.

The best of everything electrical... via GraybaR

To: Prod. Dept

Let's not have a slump in production this year during the hot months. Have a ventilating survey made and see if these new fans will solve our problem. If they will, let's get them installed pronto!

E. H.

ALABAMA
Birmingham

ARIZONA
Phoenix

ARKANSAS
Little Rock

CALIFORNIA
Fresno
Long Beach
Los Angeles
Oakland
Sacramento
San Diego
San Francisco

COLORADO
Denver

CONNECTICUT
Hartford (West)
New Haven

DELAWARE
Wilmington

DISTRICT OF COLUMBIA
Washington

FLORIDA
Jacksonville
Miami
Orlando
Tampa

GEORGIA
Atlanta
Savannah

IDAHO
Boise

ILLINOIS
Chicago
Peoria

INDIANA
Evansville
Hammond
Indianapolis

IOWA
Davenport
Des Moines

KANSAS
Wichita

KENTUCKY
Louisville

LOUISIANA
New Orleans
Shreveport

MAINE
Portland

MARYLAND
Baltimore

MASSACHUSETTS
Boston
Springfield
Worcester

MICHIGAN
Detroit
Flint
Grand Rapids
Lansing

MINNESOTA
Duluth
Minneapolis
St. Paul

MISSISSIPPI
Jackson

MISSOURI
Kansas City
St. Louis

MONTANA
Butte

NEBRASKA
Omaha

NEW HAMPSHIRE
Manchester

NEW JERSEY
Newark

NEW YORK
Albany
Binghamton
Buffalo
New York
Rochester
Syracuse

NORTH CAROLINA
Asheville
Charlotte
Durham
Winston-Salem

OHIO
Akron
Cincinnati
Cleveland
Columbus
Dayton
Toledo
Youngstown

OKLAHOMA
Oklahoma City
Tulsa

OREGON
Eugene
Portland

PENNSYLVANIA
Allentown
Harrisburg
Philadelphia
Pittsburgh
Reading

RHODE ISLAND
Providence

SOUTH CAROLINA
Columbia

SOUTH DAKOTA
Aberdeen

TENNESSEE
Bristol
Chattanooga
Knoxville
Memphis
Nashville

TEXAS
Amarillo
Austin
Beaumont
Corpus Christi
Dallas
Ft. Worth
Houston
San Antonio

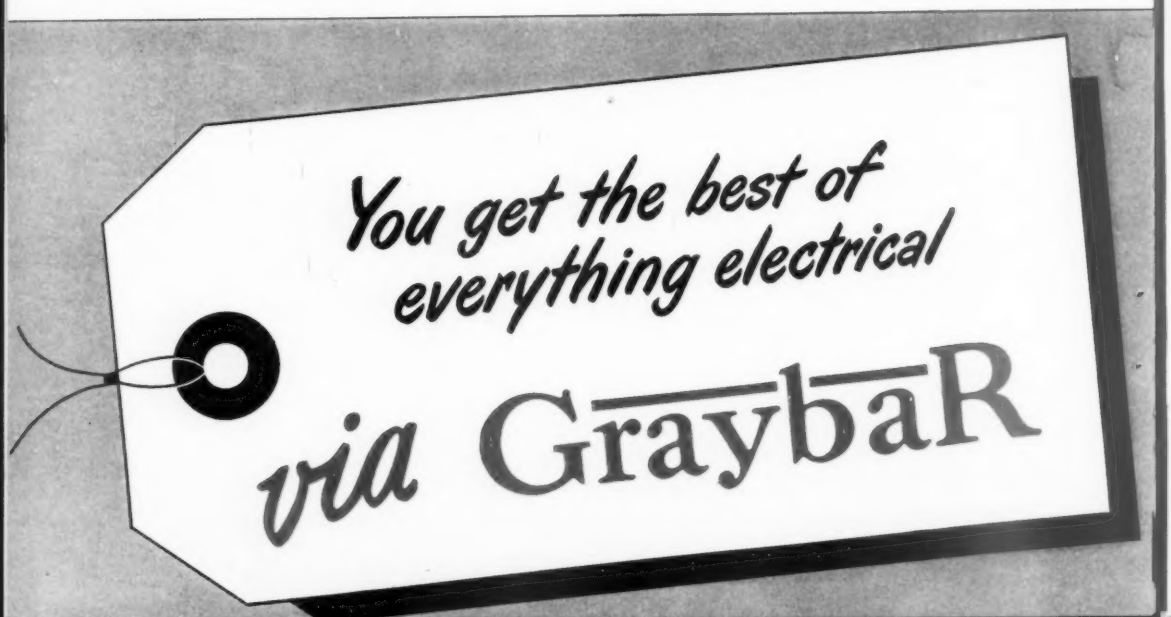
UTAH
Salt Lake City

VIRGINIA
Norfolk
Richmond
Roanoke

WASHINGTON
Seattle
Spokane
Tacoma

WEST VIRGINIA
Charleston

WISCONSIN
Milwaukee



FACTORY
MANAGEMENT AND MAINTENANCE
L. C. MORROW, EDITOR

Modern Plant Buildings for Lower Unit Cost

● "There was a snapshot of the silver-plating works near Warsaw where they made graceful vases and long-handled coffee pots which were then shipped to Persia and sold as Persian. In this group of old buildings they pointed out one that had been the love nest of a beautiful lady and one of Napoleon's officers. This house, like the rest, had walls four feet thick. To avoid these, the work, in the process of plating, had always gone in and out and around in a maze. Now, as the photo showed, they had broken through the old walls and the 'Persian silver' required only one-fourth the former distance and time to be plated. Now it went straight through the love nest."

The quotation is from Pearl Franklin Clark's *Challenge of the American Know-How*, a book that tells of the experiences of the late Wallace Clark and the author (his wife) in getting important units of European industry to accept American methods of "removing obstacles to a free flow of work." It is the author's testimony that when the obstacles to a free flow of work are removed the obstacles that are in the minds of the workers also are removed. Obviously, with both physical and mental obstacles eliminated, production per man-hour will go up and unit cost of product will go down.

The illustration is cited to emphasize the importance of a "free flow of work." Not many industrial plants in America are likely to have walls four feet thick. Nor could many love nests be found, in all probability. Yet the equivalent of 4-ft. walls do exist in great number. Closely spaced columns, narrow doorways, low ceilings, high ceilings, obsolete wiring, inadequate shipping facilities, improperly located sanitary facilities, are some of these equivalents. And parallels to love nests can be found, too. They are represented by retention of the old for the sake of sentiment and by the appeal to the lazy mind of the *status quo*.

No extensive statement need be made to FACTORY's readers about the advantages of the removal of obstacles to a free flow of work. The need is rather to remind them, as we do annually, that the free flow of work, and therefore the cost reductions, tie in definitely with industrial plant buildings. In this foreword we say so without qualification, and we submit the editorial pages that follow to provide the case material to support our assertion.

We want to nudge the reader toward a specific line of thought while he reads our reports on what has been done to remove the obstacles from the workers' minds. We are thinking about such things as the looks of the place where he spends the greater part of his waking life; the facilities he has for keeping clean; the provision of eating places; the equipment and opportunities for recreation and study. These items and others add up to a good place to work. They add up also to a proper consideration of the human factor, which anyone who knows his way about in industry recognizes as the No.1 factor today.

Why 1949 Is a Good Year to Build

Admitting the desirability of a new or modernized plant, is this the time to build? A report issued by the Associated General Contractors of America, based on returns from more than 5000 general construction concerns, finds that:

1. Materials, except for steel, and in some areas cement, are in relatively plentiful supply after years of shortages.

2. Critical shortages of skilled workmen in recent years in most communities are being replaced by a more plentiful supply of craftsmen.

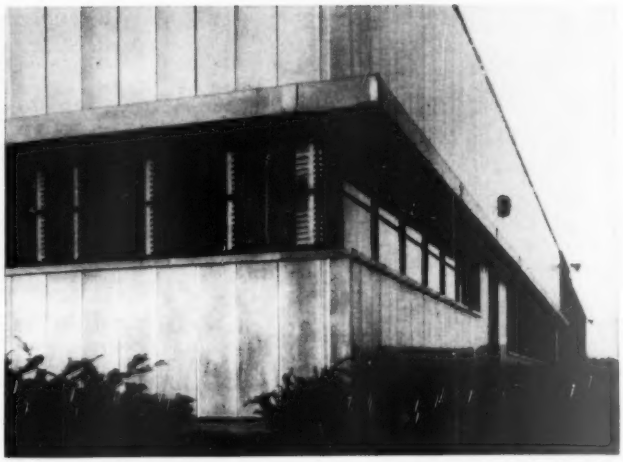
3. In the field of industrial, commercial, and institutional building, 66 per cent of those replying believe that costs are stabilizing. Cost trends show a remarkable reversal since the July 15 survey. In that summary 76 per cent saw rising prices ahead in the building field. Eighty per cent now see either stabilization or decline.

Always calling for the most careful consideration, the matter of industrial plant building this year demands attention because of the potential savings in production costs and the opportunity for securing new plant at stabilized prices.

Today's Trends in Plant Design and Construction

● Today's new plants are designed to meet flexible production requirements and low maintenance cost. Moreover, new plants are planned and built with increasing attention to their role in the community pattern. Employees like to work in the bright and cheerful surroundings of today's new plants, and it appears that at least one union has an active interest in air conditioning. The Textile Workers Union of America (CIO) is reported to be prepared to negotiate on the subject if employers don't consider it favorably.

In preparation for the following roundup of trends, many of America's leading industrial architects, engineers, and builders were asked what they considered significant in recent industrial design. A summary of their comments follows:



METAL WALL PANELS, with insulation between aluminum exterior and steel interior, form the walls of F. Ducharne Silk Company's new weaving mill at Glen Rock, N. J. Result—low upkeep, attractive exterior

1. Structural Design. There seem to be no fundamental changes in structural design. However, the limited availability of steel has encouraged the use of more pre-cast concrete work, but this may be a temporary trend that will be reversed as steel becomes more easily obtainable. Limited availability has also encouraged more efficient use of steel in plant construction. One engineering firm states that rigid frame buildings are being employed for the widest range of industrial uses.

2. Column Spacing. The trend toward wide column spacing noted in FACTORY, April, 1948, is still valid.

3. Production Layout. There is a growing awareness of the long-range economies to be gained by designing new plants with a view to flexibility of use, states the Austin Company, Cleveland. Thus, while many new plants are being designed to accommodate specific operations—in many instances around completely integrated processes—provision is being made to accommodate any foreseeable changes. In some instances, this is leading to the installation of service-line grids that embrace the entire manufacturing area, so that the equipment layout can easily be changed. (See Western Electric Company's new plant, page 46.)

4. Floors. The Electric Industrial Truck Association reports that industrial manufacturers are prepared to build "ram trucks" to handle 60,000-lb. loads. This means that in new plants built to accommodate such trucks considerably more attention will be given to suitable floor designs.

5. Walls. There is increased interest shown in insulated metal panels for walls, according to the H. K. Ferguson Company, Cleveland. This is partly due to the present cost of masonry.

The continuing shortage of bricklayers has been responsible for the extensive use of insulated metal panels and asbestos cement, precast or poured-in-place concrete wall construction. There may, of course, be a return to the wider use of brick walls when conditions get back to normal.

Use of cinder block in side walls is also increasing.

Parapet walls are no longer in mode. There is an abrupt cessation of the side wall at the roof line. In many cases the roof slab is continued outward to form a projecting eave. This tends to keep walls cleaner, and such projections are designed to reduce sun glare and heat from the oversized windows in modern factories.

A continuing trend in wall construction appears to be more glass and less masonry. Sash of the continuous type is growing in favor because of the reduced need for supporting jambs.

6. Roofs. Several new products for roof decks are on the market. In general, they are expanded mica concrete or other lightweight admixtures which combine both the structural deck and insulation in one unit. The trend toward the use of new materials in roofing is particularly significant in the face of declining lumber prices. It has been stated that in most parts of

the country wood roofs will be the exception from now on. Aluminum deck is being used in some plants in place of steel, and has an advantage in that it eliminates the need for painting.

There is a definite tendency toward the elimination of monitors, particularly in buildings covering large areas, mostly because of lower initial cost and reduced maintenance expense.

Where skylights and monitors or sawtooth sections are used, there is increased use of a deeply corrugated thick glass, with or without wire reinforcement.

The use of roof ponds or spray systems for reflective and evaporative cooling is increasing. Installation cost is relatively low, since the roof and flashings must be waterproof in any case. This type of roof is effective in reducing heat transmission. Life of the roofing is reported to be greatly extended, and this type of insulation is said to cut down the amount of ventilation required in summer.

7. Windows. Controlled-conditions plants are no longer windowless. Where side walls are principally solid, vision strips, at least, have been incorporated in their design. Heat transmission by windows can be reduced by heat-absorbent glass. Double- or triple-glazing, with air or vacuum between panes, is gaining favor. Vacuum glass block, which can be had with predetermined light-directing qualities, is being used extensively, partly because of its appearance, and partly because it shows dirt less than sheet glass.

Strictly windowless construction has increased, however, in the chemical industry, states F. H. McGraw & Company, Hartford.

8. Heating and Ventilating. Radiant heating is growing in importance, especially in the smaller plants. Many of the newer plants are being designed for future installation of air conditioning or forced ventilation.

9. Interior Painting. One of the cheapest and easiest ways by which plant owners are gaining an immediate advantage in the field of improved personnel relations is through the use of color. A wealth of factual information is readily available on the use of color in the plant. Such simple expedients as standardizing color keys for varying degrees of hazard on machinery can sharply reduce the accident rate. Another factor is the effectiveness of color in combating fatigue in industrial operations. A careful choice of color on interior surfaces, based on the type of work done in a room, has led to increased production, according to Walter Kidde Constructors, Inc., New York.

10. Partitions. In the interest of flexibility, sectional, easily changeable steel or asbestos partitions are widely used. Movable steel partitions combine the benefits of faster erection, quicker occupancy, and lower ultimate cost with ease of alteration or addition to the original installation. For more permanent installations, glazed hollow tile partitions are being used, particularly where cleanliness and low maintenance are important.

11. Liquid Waste Disposal. A gradual recognition by the general public of the necessity for controlling some effluents and the discharge into lakes or rivers of objectionable solid materials from some processes is resulting in the passage of laws that place the burden on the plant owner. Foreseeing this necessity, even where no regulating statute now exists, forward-looking plant owners take this factor into consideration in site selection.

12. Plant Sanitation. The continuing emphasis on good employee relations has led to careful attention to sanitary facilities. In lockers and washrooms the design is influenced by a desire for continuous maintenance of the highest degree of sanitation, so glazed tile or other equally serviceable materials are usually favored.

13. Recreational Facilities. There is pronounced absence of recreational facilities, both indoor and outdoor, in smaller plants. This does not necessarily hold for the large plants. Some of the larger new plants have both indoor and outdoor playtime facilities.

14. Parking Facilities. Offstreet parking is now a must in the consideration of new plant location and design.

15. Landscaping. American industry today is rapidly adopting a new look by adorning itself with shrubbery, trees, and lawns. Generally, the acreage on which a plant is situated is sufficient to permit the planting of lawns and trees. The use of landscaping reflects the desire on the part of industries to function as good citizens of the communities in which plants are located. This calls for good housekeeping inside and outside the place of business.

16. Personnel and Public Relations. With the growing tendency among managements to conduct plant tours, pride in the plants' interior and exterior appearance is growing. Likewise, many plant owners have observed surprising results from employees when new plants are made attractive and cheerful.

17. New Materials. Materials are now becoming available which greatly reduce the cost and labor of plant maintenance, states The Rust Engineering Company, Pittsburgh. For example, rust-resisting metals are coming into wider use now that the problem of critical short supply is easing. Copper flashing, aluminum sills, sash, and coping are being used. Spandrel beams over windows in outside walls are first being covered with membrane flashing of a rust-resistant metal before continuing the brick work. Use of ceramic materials and enamelled steel saves plastering and painting, and their cleanliness is maintained at minimum cost. In addition, they are being applied from another functional consideration—namely, worker efficiency.

Plastic materials are being used increasingly in partitions and skylights; also in connection with some fluorescent lighting installations. New aggregates developed for use in lightweight concrete are proving of value in multi-story buildings. Stainless steel is being used in specialized installations for roofing It is also used in conjunction with heating and ventilating systems where conditions of corrosion and high temperature are encountered, and in heating and sanitary facilities and roof drainage equipment.

Prefabricated wall panels that provide exterior surface, insulation, and interior surface all in one are meeting with approval. These panels come in a number of surface types and may be had with various types of insulation. Among the newer types of roof planks is one molded from mineralized wood chips combined with Portland cement and reinforced by steel bars.

CONTROLLED CONDITIONS are necessary in the manufacture of electronics equipment, so the new Western Electric plant is completely air conditioned. Smaller production rooms surround assembly area

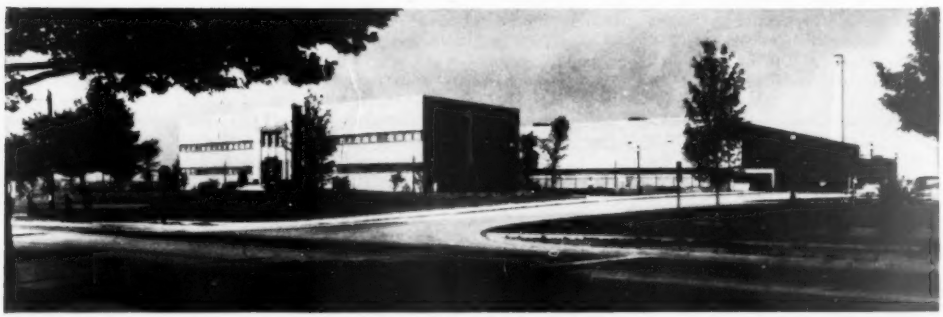
Western Electric Company, Inc.

NEW PLANT AT ALLENTOWN, PA.

● More than 2500 people work in a controlled atmosphere in Western Electric Company's new plant at Allentown.

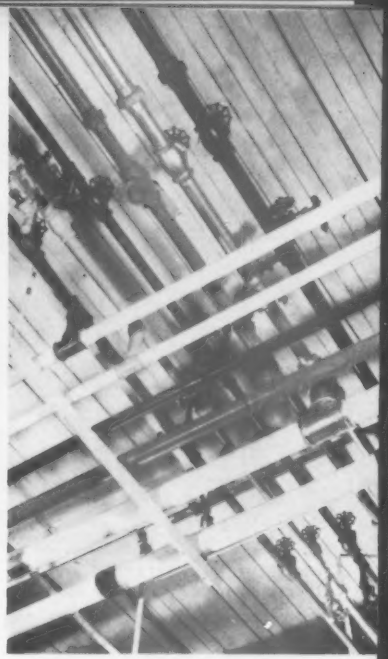
The latest manufacturing techniques in the production of electronics equipment call for exacting standards of cleanliness. This new plant is designed to meet such standards.

It is a two-story structure with 341,600 square feet of floor space. On the main floor is the room, 325 by 400 feet, in which most of the manufacturing takes place. Surrounding this room is a 25-ft.-wide periphery partitioned off for certain processes with special air-conditioning requirements. The ground floor, which measures 375 by 450 feet, is used for manufactur-



A GOOD PLACE TO WORK. BUILDINGS WERE SPECIALLY DESIGNED TO DO PART OF THE TEMPERATURE-CONTROL JOB

OFFICES on second floor of administration building are well lighted, quiet, and air conditioned for worker-comfort and efficiency



SERVICE DISTRIBUTION system carries thirteen liquids and gases

ing processes requiring heavy machinery, raw material stores, receiving and shipping departments, and electronics research.

Almost clinical standards of cleanliness and a rigidly controlled atmosphere are required. The smallest particle of dust, the slightest trace of perspiration from an employee's hand, might seriously impair the quality of the electronics equipment made in this plant.

Temperature Control · Part of the job of atmosphere control is performed by the building itself. It was designed to seal off the interior and to cause a time lag in transmission of solar heat from the out-of-doors. The heat created by the manufacturing processes makes the problem of cooling the building far more serious than the problem of heating it.

Walls create a 12-hour time lag in transmission of solar heat, so that heat from the noonday sun does not penetrate them until after midnight. They are 13½ inches thick and consist of an 8½-in. outside brick wall, a vapor seal, 1 inch of glass fiber insulation, another vapor seal, and finally 4 inches of light-brown glazed tile on the interior. The vapor seal eliminates condensation caused by the difference between indoor and outdoor temperature.

Windows are designed to provide insulation and to seal off the inside of the building. They consist of a vision strip of insulating window 30 inches high which surrounds the building on the main floor level. The insulating window has two thicknesses of glass with a 3/16-in. air-space seal between.

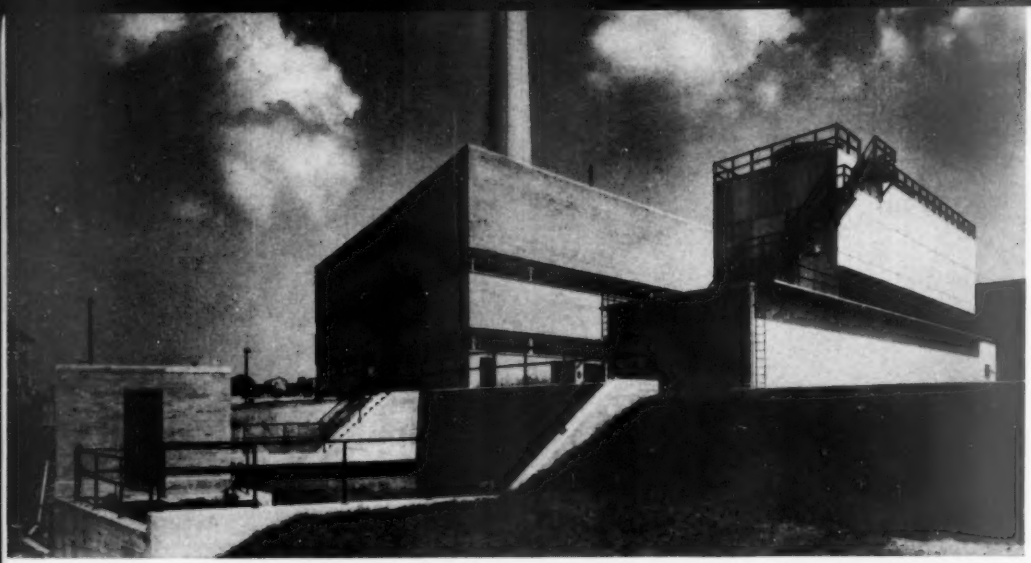
A flat 20-year bond-type roof was designed to provide a 4-hour time lag in solar heat transmission. It consists of slag strewn on three layers of tar paper. Underneath this rests 2 inches of glass fiber insulation. Supporting this is sheet structural steel. Beneath the steel is an open-truss construction 11 feet high which houses air conditioning equipment and serves as a plenum chamber for air to be recirculated to the main floor.

Air Conditioning · Equipment for air conditioning consists of fifteen units, five of which serve the periphery, six the manufacuring room on the main floor, and four the lower floor. These units are operated by master controls in a monitor room in the truss space.

Almost 4 miles of ducts and more than 500 diffusers serve the fifteen units, which altogether process some 750,000 cubic feet of air per minute and replace from 100,000 to 300,000 cubic feet of process exhaust per minute. Indoor atmosphere is maintained within the range of 70 to 80 degrees, at 40 to 50 per cent relative humidity. These conditions are maintained even during the summer and winter extremes. The design premise used was 95 degrees, and 40 per cent relative humidity for summer and —5 degrees and 60 per cent humidity for winter.

Dust Control · To keep dust from seeping in under doorways, the air conditioning equipment maintains an indoor pressure slightly higher than that outdoors. In some of the partitioned areas in the main floor periphery, pressure differentials are maintained, depending on the nature of the work. There is negative pressure in the chemical

ENGINEER AND BUILDER:
THE AUSTIN COMPANY
CLEVELAND



SERVICE FACILITIES are grouped on hillside at rear of plant. Two-story utilities building is at center. Fire protection tank at right supports cooling towers. Diffusion basin at left renders effluents harmless

CERAMICS PREPARATION ROOM is one of 20-odd special process areas located in the 25-ft. lean-to section that surrounds the main-floor assembly area. Below, one of the six air conditioning units

treating and spray rooms, preventing fume-laden exhaust from recirculating into other areas. In the cathode coating room, on the other hand, where the most rigid air purity standards prevail, a positive pressure is maintained.

Plant Construction

Construction in the manufacturing plant is of 100-ft. span-welded steel trusses on 25-ft. centers on the main floor. This permits flexibility of manufacturing layout. The floor itself, supported by steel beams, is made of 3x6-in. planks laid on edge and covered by 1-in. strip maple flooring.

Lighting · It takes clear, shadowless lighting to assemble many of the tiny tubes Western Electric makes at Allentown. In the manufacturing building, some 13,430 40-watt fluorescent tubes, most of them installed in reflectors mounted flush with the acoustical ceiling, deliver light to the working plane. Special fixtures have been installed in some areas.

Process Piping · If a hole is bored at any point in the wooden main floor of the manufacturing building, it will come out not more than 10 feet from a set of pipes carrying a total of twelve different services. Facilities have also been provided for condensate return. Flexibility is the keynote of the vast process-

piping network. The system involves more than 40 miles of piping. Each of the twelve different services passes through a differently colored series of pipes under the laminated wood manufacturing floor. Pipes, uniformly arranged, form a colorful pattern closely resembling a Scotch plaid. Services are divided into two groups, the first carrying steam and water, the second carrying gases. The first group includes house water, cold city water, steam, condensate return, cold soft water, and hot soft water; in the second group is included low-pressure air, high-pressure air, city gas, hydrogen, nitrogen, and oxygen.

Distribution of the services under the floor, rather than overhead, enhances the appearance of production areas. It eliminates a gathering place for dust which would be injurious to electronics products, effects a saving of pipe length required for connections, and permits rearrangement of the connections without inconveniencing employees engaged in production.

Standardization of the piping system goes beyond arrangement of pipes. Wooden plugs for every connection hole that may later be abandoned are of specified size and shape, and the top of the plug is finished to match the surface of the floor.

The uniform pattern of the distribution system and the standardization of its parts make it very simple to understand. One need only study a small part of it to understand the whole. This saved many work hours during installation; workmen always knew what to do next. Maintenance, too, is made easier, because fewer standardized parts have to be kept on hand for replacements and repair work on the system.

The pattern of piping follows the form of the building, the main manufacturing floor being divided into smaller and smaller areas by successively smaller sizes of pipe. Steel columns divide the floors into 270 bays, each 25 feet square. Each bay is divided by steel floor beams into bay panels, 25 feet by 8 feet, 4 inches. The pattern of piping is identical in each of the 270 bays, and smaller sizes of pipe form identical patterns in each of the 810 bay panels. Thus uniformity and flexibility, the two dominant requirements established from the outset, have been achieved.

For ready identification, piping for each of the services is designated by a color code.

Service Buildings

Utilities · The utilities building is the center of operation for many services — steam generating, air conditioning, water softening, watch service headquarters, and a modern waste disposal system.

The steam generating system supplies steam at the rate of 63,000 pounds per hour. The system consists of four boilers, three of the water-tube type, each with 3000 square feet of heating surface. The fourth is a fire-tube boiler with sufficient capacity to supply process steam during the summer.

Near the utilities building is a waste disposal plant designed to neutralize acid and cyanide wastes which are byproducts of electronics manufacture. From the neutralizing basins, harmless effluents flow into a storm drain and thence into the Lehigh River.

Large quantities of soft water are required in some manufacturing operations, and a steady flow is maintained automatically by three water softeners which process 1000 gallons a minute.

The watch service headquarters, located in the utilities building, is the nerve center of a highly intricate signal and alarm system that covers every building in the plant. Panels at the central control desk connect with a fire alarm system, smoke and gas detectors in the air conditioning system, and an alarm system in the gas generating plant. Safety has been carefully engineered into the plant; nothing has been taken for granted.

Gases required in the manufacture of electronics products are produced in the gas generating building located at one corner of the plant group. Hydrogen and oxygen are obtained from water by an electrochemical process, and additional oxygen and nitrogen are produced from air.

Administration · The two-story administration building is an imposing structure with a massive entrance framed in native limestone blocks. Double doors at the entrance open into the reception lobby. This building houses administrative offices as well as offices for the engineering organization. It also contains a reference library and facilities for reproducing photographs and drawings.

The architectural styling of the exterior of the building is continued in the interior. Walls are of glazed tile, and marbleized tiling covers the floor. Soundproof ceilings help keep the offices quiet, and scientifically designed lighting eliminates eyestrain.

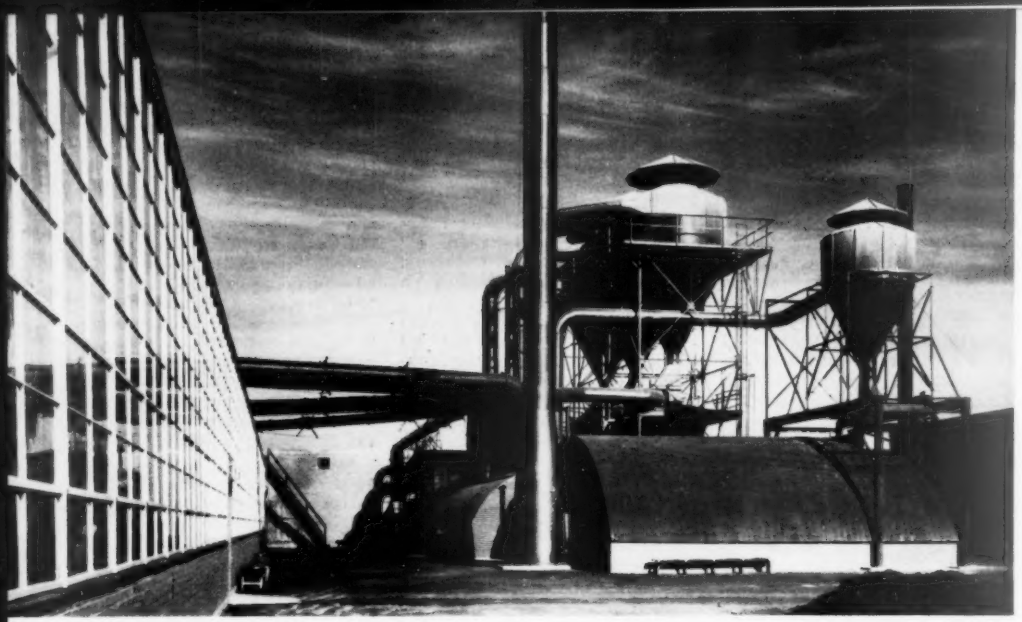
In addition to its two stories, the administration building has a partial basement. It is also of steel frame construction and measures 75 by 225 feet. The second story has clear-span welded-steel trusses 76 feet long on 25-ft. centers. Column spacing on the first floor is 25 feet on centers. This building, too, is air conditioned.

Welfare Provisions · Plans are now under way to devote a large area west of the plant to recreation facilities. A grandstand seating 300 people, a dance pavilion, deck

HANDSOME LOBBY has black upholstery for contrast with green terrazzo floor and paneled walls

shuffleboard, a soft-ball diamond, six horseshoe courts, and a handball court are being planned. The plant is equipped with a bright, cheerful, well-appointed employment office on the first floor of the administration building. A plant hospital contains examination rooms, wards, first aid rooms, and laboratories.

A spacious cafeteria with attractive furniture is available for employees. This room has recessed fluorescent lighting, acoustical ceiling, and a maple floor.



SAWDUST DISPOSAL posed a big problem for Spalding. Final decision was to burn it. Fans draw sawdust from air through collection pipes, into hoppers (above). Hoppers feed a furnace in rear of plant

CONSOLIDATION OF FACILITIES was aim in building new sporting goods plant. This one- and two-story plant does the job formerly done at three sites. General and executive offices are in foreground

A. G. Spalding & Bros. Inc.

NEW PLANT AT CHICOPEE, MASS.

● Economy of operation, low-cost maintenance, and enlightened employee and public relations were determining factors in the design of the new Spalding plant.

The purpose of the new plant was two-fold: to consolidate Spalding operations from four plant sites to one, and to provide additional warehousing space to accommodate seasonal inventories common to the manufacture of sporting goods equipment.

The new manufacturing section, which contains 250,000 square feet

MANUFACTURNG AREA has uniform bays throughout. Fluorescent lighting and mechanical ventilation permitted use of economical flat-roof construction. Exposed piping is identified by color

SPRAY BOOTHS in finishing department are individually lighted. Ducts remove lacquer fumes

SPACIOUS LOBBY is good investment in public relations. Customers' store for buyers adjoins the lobby

of floor space, is devoted to warehousing and to lumber processing for golf-club heads and tennis, squash, and badminton rackets. The rackets are manufactured in their entirety in this new plant. Lumber is unloaded directly from boxcars into steam-operated kilns, and eventually leaves the building as completed rackets.

Building Construction · The 500 x 526-ft. plant is of exposed steel frame construction, with steel roof deck, reinforced-concrete floor slab on fill, and brick walls. Economy of design was obtained in several ways. For example, a dead-level roof was constructed. This reduced steel fabrication charges to a minimum, since the frame was designed for the utilization of a minimum amount of steel. Because individual members of the steel frame in each bay were repeated hundreds of times, fabrication charges were also reduced to a minimum.

The same principle of mass production was applied to other segments of the structure, such as heating lines and electrical conduits. Among other economies made possible by the design, one that deserves particular mention

BUILDER:
JOHN W. HARRIS ASSOCIATES, INC.
NEW YORK

was the continuation of steel sash from the brick spandrel wall to the roof line. This practice not only reduced the present high cost of brick work but also eliminated scaffolding, which would have been necessary had brick been continued above the sash to the roof.

Column spacing is standard throughout—25 feet both ways. Clearance from floor to lowest chord in the manufacturing and storage areas is 14 feet. The roof is five-ply over fiberboard insulation and steel decking. Interior walls are 10-in. cavity brick, with and without sash, to the roof. Partitions are of various types, depending on their purpose. Five kinds are to be found—concrete block, glazed and unglazed structural tile, plaster, and structural steel. Inside walls of factory and warehouse were painted green. Piping throughout the plant was painted in varying colors, according to function.

Plant Services · Steam from a previously existing steam plant is supplied to radiators, convectors, and unit heaters, according to plant requirements. Light is predominantly fluorescent, with 40 foot-candles supplied in the manufacturing area. The rest of the plant is lighted at a level of 10 to 40 foot-candles. Supplementary lighting is supplied where necessary by fluorescent and incandescent units. Ventilation in the manufacturing and storage areas is provided by a supply and exhaust system through ventilators placed in roof bays.

In the woodworking department, where sawing, sanding, and drilling operations are conducted, a large sawdust-collecting system has been installed. Dust is taken out of the air, removed to large hoppers in the rear of the plant, and burned. In the lacquering section, where racket frames are sprayed, a special ventilating system has been designed to remove obnoxious fumes from the air. This is accomplished in part by spraying in hoods similar to those commonly used in chemical laboratories.

Electrical distribution for lighting is through conduits on ceilings. The tennis racket manufacturing area is supplied with power at 550 volts by bus duct on the ceiling. Steam and gas were brought in from already existing lines in an adjacent building.

A railroad siding services 50 feet of a 210-ft. covered loading platform. A truck ramp extends for 220 feet along the outside of building. A conveyor has been installed to transport lumber from the rail siding to the dry kilns. This eliminates all intermediate handling of lumber.

Sanitary facilities have been dispersed through the plant, as required by plant population centers. No locker rooms are required because the type of work does not necessitate clothing changes. A complete medical section is provided, consisting of examination rooms, X-ray, and bedrooms.

Administration Building

Structurally, the administration building is part of the main plant, although it rises two stories. First-floor ceiling height is 12 feet; second-floor, 9 feet. Construction is of steel, with reinforced concrete arches, and brick walls. The roof is the same as that over the manufacturing area, except that reinforced concrete is used in place of steel deck.

This section contains a lobby, general offices, executive offices, medical facilities, and a cafeteria. For noise reduction, acoustical ceiling tile has been used in the cafeteria and general offices. In the lobby, acoustical plaster was used. Offices are painted gray. Executive offices are paneled in knotty pine. Electrical distribution to the office is by floor conduit. The cafeteria, containing 8000 square feet is serviced by a 4000-sq.ft. kitchen. These facilities were designed to accommodate about 350 persons.

Grounds · Mindful of the human relations factors which contribute to a successful manufacturing operation, the Spalding management put the same careful thought and planning into the employee and public relations aspects of their plant that went into the manufacturing and storage portions. The firm's standing in this Massachusetts community is reflected in the attractive, but completely functional, facade of the structure. The approach to the problem was to make the plant site a community asset rather than a community liability. The entire area has been landscaped, and the outward appearance is definitely positive from a public relations standpoint.

The new plant shares 33 acres with an existing factory building, a 450-car parking lot, and various outlying buildings. On the grounds are tennis and volley ball courts and a baseball diamond. Parking-lot pavement is of bituminous material. All other roadways are concrete. A chain-link fence surrounds the well-landscaped plot.

PLANT CAFETERIA has metal-pan ceiling, recessed fluorescent lights, asphalt tile floors. Speakers for public address system are on ceiling

BROAD GREEN LAWNS AND GENTLY ROLLING HILLSIDE PROVIDE THE PERFECT SETTING FOR THIS JEWEL OF A PLANT

The Maltine Company

NEW PLANT AT MORRIS PLAINS, N. J.

● Built on a 16-acre plot in the rolling hills of northern New Jersey, the handsome Maltine plant might well be called a *big* little plant. At least it is surprisingly complete for its size, combining in its 100,000 square feet of floor area general offices, pharmaceutical manufacturing and warehousing operations, a research building and pilot plant, a boiler plant, and complete welfare facilities.

Three buildings comprise the new plant. Manufacturing and administration functions are in the main building. A research building and boiler plant constitute the other two. Process layout for the new plant is functional, with some gravity flow.

Administration and Manufacturing

This building, largest of the three, measures 270 by 280 feet. It is constructed of steel and light-colored face brick. It is of one- and two-story construction, with a total of 90,000 square feet of floor space. Column spacing is 22 by 32 feet for efficient storage of the company's standard pallets. Clearance from floor to the lowest chord is 14 feet, except in the high bay. Floors are concrete. Roofing is built up on either steel deck or concrete plank with insulation. Of the plant area, 35,000 square feet are devoted to storage, and 20,000 square feet are used for manufacturing. Sidewalls for all buildings are 8 inches thick and backed up with tile. The exterior is 4-in. face brick. All sash throughout the group are steel. Partitions are of terra cotta. Intricate and effective color schemes have been projected throughout the plant.

Plant Services · The plant proper is heated by both hot air and steam, and is equipped with radiators and registers. Ventilation is secured by means of ducts and fans. It is anticipated that future air conditioning will make use of the ventilating ducts already in place. Lighting in the manufacturing plant is fluorescent type and provides 15 to 35 foot-candles at the working plane. In the office, fluorescent lighting has been used and provides an intensity of 35 foot-candles. Good acoustical tile has been used on all office ceilings. Electrical energy is distributed at 440/208/120 volts. Distribution lines, water, fire and steam, are underground between buildings and exposed within buildings. Propane gas is delivered in liquid form to company's tank farm by truck because of the distance from normal gas supply. Receiving and shipping are by motor truck, since there is no railroad siding. An enclosed truck dock is used. Buildings are completely sprinklered.

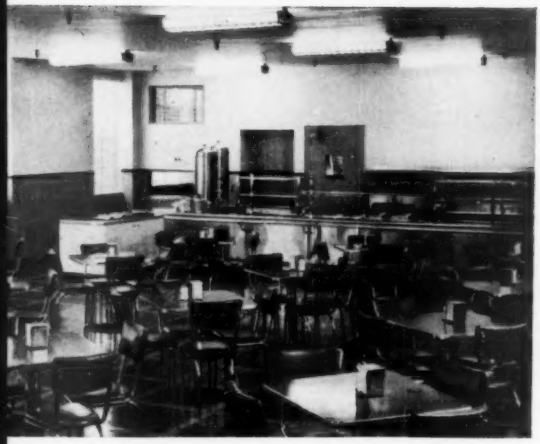
Employee Facilities · The attractively decorated cafeteria, 36 by 52 feet, is equipped with fluorescent-type egg-crate fixtures, venetian blinds, dadoed wall trim, and asphalt tile flooring. Adequate toilet rooms, locker rooms, and rest-rooms have been provided. The administration building contains a first aid room, medical examination room, and adjoining sanitary facilities. Total space for this group is 18 by 33 feet. Adjacent to the plant there is a parking lot, 150 by 100 feet, with cinder surface.

Roadways are generally 22 feet wide and are macadam-surfaced.

To improve the site, a stream with a flow of approximately 5,000,000 gallons per day was diverted for a distance of 1000 feet, the maximum lateral displacement

---

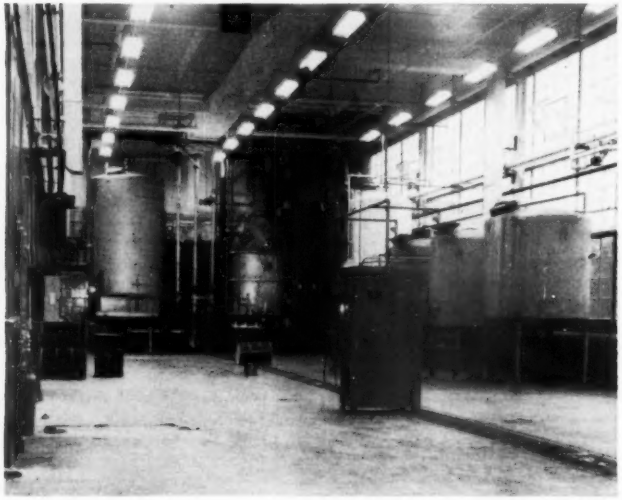
ENGINEER AND BUILDER: WALTER KIDDE CONSTRUCTORS, INC., NEW YORK



WELL-APPOINTED CAFETERIA. Removable furniture permits recreational use of room

SIZE OF BAYS in warehouse was chosen to permit most efficient arrangement of standard-size pallets

being 300 feet. A concrete storage basin of 150,000-gal. capacity was constructed directly under the boiler plant to provide a two-source water supply for the sprinkler system. A split system was designed for heating the offices. This consists of wall-hung steam radiation to offset wall losses and infiltration, a warm-air duct system to compensate for roof losses. No city sewage system is available, so sanitary and process waste is disposed of in two concrete septic tanks. Outside floodlighting and roof-mounted spotlighting is installed. Dual-type street-light fixtures, mounted on standards, provide floodlighting on the front of the building and ordinary lighting on the side facing away from the building. A sufficient water supply for the plant is obtained from our own deep well.



MANUFACTURING AREA (high bay section) has ample light sources. Process equipment requires additional clearance to frame

Research Laboratory

The second building in the group measures 50 by 122 feet and is physically similar to the other two. This two-story building has a floor space of 6100 square feet. Column spacing is 20 by 22 feet, with a ceiling height of 10 feet, 6 inches. The laboratories are heated by steam radiators. Both fluorescent and incandescent light sources have been supplied, giving anywhere between 15 and 35 foot-candles at work level. Ventilation is natural, and air conditioning has been provided in the animal colony. Acoustical tile was used in ceilings for noise control. Current is supplied to the laboratory by underground cable. The power comes in at 440 volts.

Boiler Plant

The single-story boiler plant, smallest of the three buildings, measures 44 by 52 feet. Its construction is similar to that of the main plant. Total floor area is 2300 feet, with a column spacing of 42 by 16½ feet. Clearance from the floor to the lowest steel is 25 feet. Floors are quarry tile and the roofing is similar to that used on the main plant. This plant is steam-heated by unit heaters and is lighted with incandescent fixtures which provide 20 foot-candles. All ventilation is natural. Electrical distribution is by cable supplying current at 440 volts.

Columbia Steel Company

NEW PLANT AT PITTSBURG, CALIF.

● Impressive evidence of the amount of materials needed to increase steel-making capacity is provided by the new sheet and tinplate mill recently completed by Columbia Steel Company at Pittsburg, Calif.

More than 24 acres of production area are under roof. Thousands of 50-ft. piles were driven into the ground under building sites. Over 500,000 cubic yards of earth and rock were excavated. Foundations and basements required 97,000 cubic yards of concrete. Steel weighing 20,400 tons was used in construction. Some 80,000 feet of pipe was laid.

Out of this impressive array of materials rose 21 buildings. Nine of them house rolling mills, pickling and cleaning departments, annealing departments, tinning lines, and other production equipment. The plant includes two change and sanitary buildings, a water filtration plant, boiler house, storehouse, oil house, machine shop extension, mill office building, restaurant, three clock houses, administration building, industrial relations building, modern hospital, and fireproof concrete dock for berthing ocean-going vessels.

Production Buildings

Basically, the nine production buildings are of similar construction. There are variations in size and degree of refinement. Floor areas of single buildings range from 27,720 to 1,937,640 square feet. All are of single-story steel construction. Interior and exterior walls are 24-gage galvanized and corrugated sheet steel. Walls in the pickling building are asbestos-protected sheet steel. Some interior walls and partitions are unglazed wall tile. Steel sash was used.

Clearance from floor to lowest chord ranges between 24 and 55 feet. Column spacing is generally 24 feet. Roofs are 22-gage corrugated and galvanized steel, truss supported. Floors are primarily hard, dense concrete. However, in certain locations wood block, acid-resisting brick, and heat-resisting brick floors are found. Aluminum paint has been used throughout.

Other Buildings

The boiler plant and storehouse are of similar construction. Exterior walls are of tile and 24-gage copper-bearing corrugated steel. The roof is of the same material, 22-gage, and truss supported. Other features are similar to those in the production buildings.

The administration, industrial relations, and hospital buildings are unlike the other buildings in several respects. They have exterior walls of common red brick veneer. Interior walls are concrete, tile, and plaster. Roofing is asphalt shingle, wood-truss supported. Floors are concrete with asphalt tile covering. Column spacing is about 15 feet both ways. Clearance, floor to ceiling, is 10 feet in offices and 8 feet in corridors. Interior walls are painted green. Trim is painted white.

Heating, Lighting, Ventilation · Gas-fired unit heaters warm the mill buildings. Offices are heated by central gas-fired furnaces.

Mill buildings are illuminated by incandescent lights hung from roof trusses in glass-covered lighting standards. Lighting units vary from 500 to 1500 watts in size. Level of illumination varies from 9 to 20 foot-candles. Interior offices are fluorescent lighted at 25 foot-candles. Ventilation is both forced and induced.

Distribution of Services · Electrical distribution feeders to the main mill are bus duct. Main lines are in tunnels. Power used in the plant ranges from 230 to 6900 volts.

Water, steam, gas, and air lines are in tunnels, underground and overhead. Acid lines are underground and overhead. Fire protection lines are underground. Plant grounds contains over 20 railroad sidings, some within buildings.

Employee Facilities · There are two cafeterias, one located in the heart of the factory area and the other in the administration building. The main or factory cafeteria has a seating capacity of 185 persons. The kitchen has complete facilities for proper storage, preparation, and service of food. The branch cafeteria in the administration building seats 90 persons.

Interior mill offices and the industrial relations building contain conference rooms which are used in conducting training classes.

Sanitary enclosures are located throughout the mill. In addition, there is one large restroom to accommodate women working on the assorting lines. Interior mill offices and office buildings contain women's and men's restrooms. There are two change or sanitary buildings containing showers, wash bowls, and toilet facilities, and equipped with lockers.

Medical Facilities · The plant hospital is a completely equipped medical unit. Among its facilities are an examination room, two waiting rooms, an X-ray room, X-ray dark room, dressing room, six toilet rooms, surgery room, eye examination room, female therapy room, and a male therapy room.

Parking and Grounds · Ample parking space is provided for workers by a fenced-in, well-lighted, paved parking lot. Parking space for office personnel working in the administration group is provided at the rear of the buildings, and visitors park in front.

Mill grounds are graded and surfaced with oil and gravel. Grounds around the administration group have been seeded. Trees and shrubs have been planted.

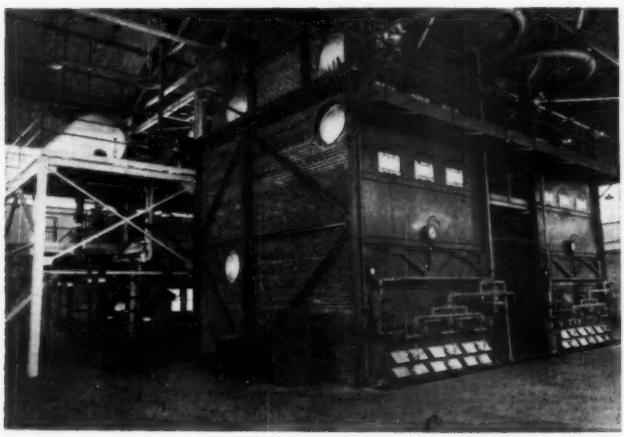
The plant is serviced with roads to all warehouses, plus roadways circumscribing the mill buildings.

The plant is safeguarded by an ample fire protection system, with hydrants located strategically throughout the grounds.

(Continued on next page)

ARCHITECT AND ENGINEER:
COLUMBIA STEEL COMPANY
PITTSBURG, CALIF.

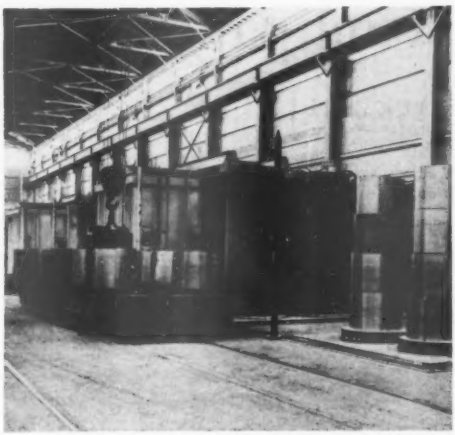
TWENTY-ONE BUILDINGS house new West Coast steel facility. Production buildings are all of single-story steel frame construction. Walls and roofs are galvanized and corrugated sheet steel



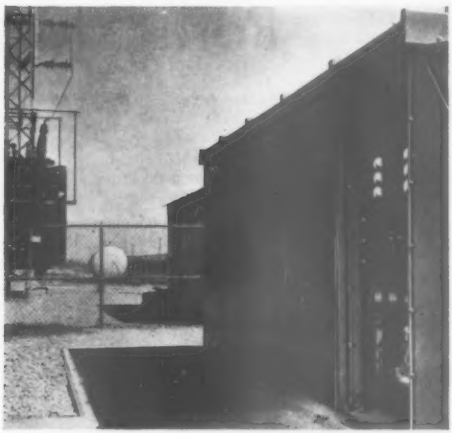
TWIN BOILERS are four-drum steam type. They supply 58,000 pounds of saturated steam per hour. Burners are normally gas-fired

FILTRATION BUILDING roof is steel, typical of entire plant

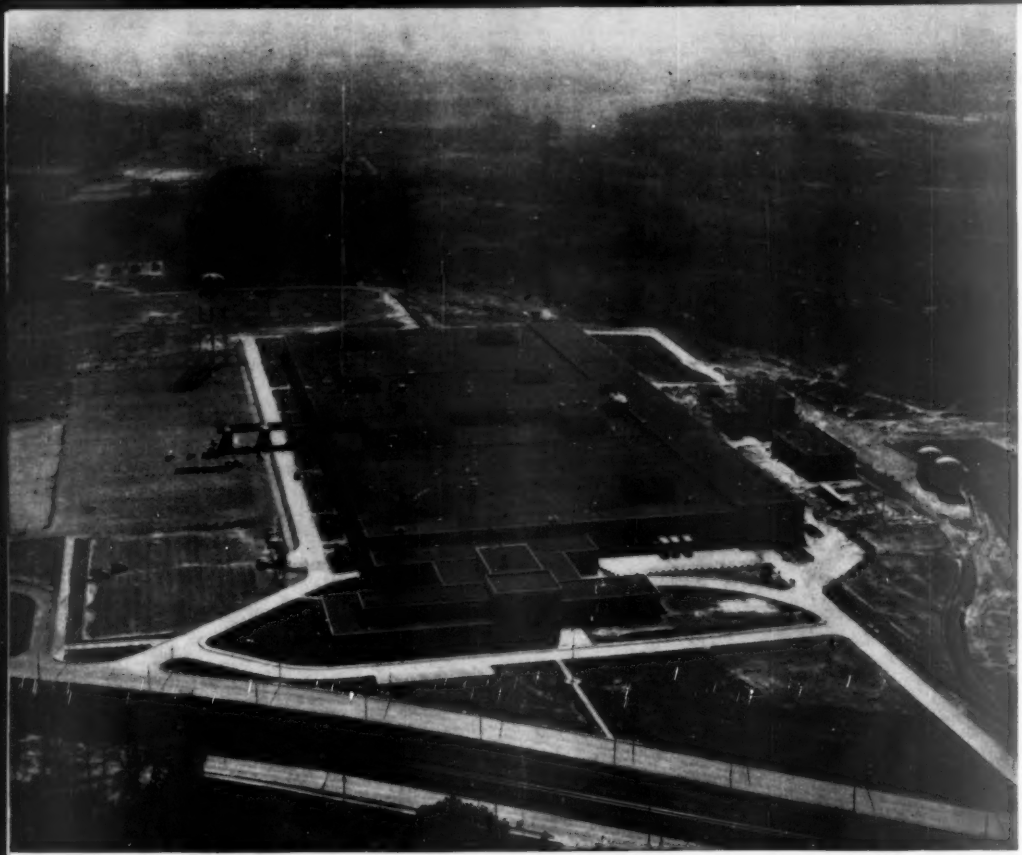
INTERIOR VIEW shows steel frame, wall, and roof construction typical of all nine production buildings. General incandescent lighting is supplemented here by fluorescent lighting at production lines



ANNEALING SECTION wall is faced on inside with brick. Magnet-equipped crane moves coil to flatcar



INCOMING POWER substation is outdoors. Metering equipment can be seen through open door (right)



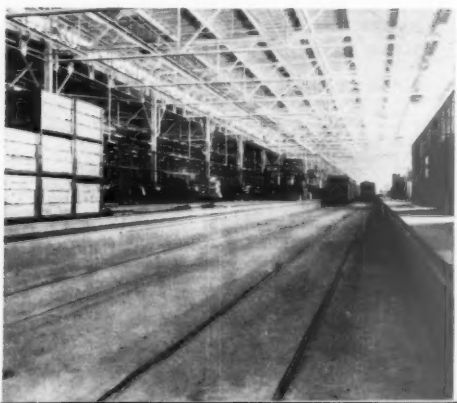
RURAL SETTING for Ford assembly plant offers good railroad and highway access. High-bay portion at right contains plant-long spur track. Office building is separated from main building by executives' garage

Ford Motor Company

NEW PLANT AT HAPEVILLE, GA.

SASH REPAIR and cleaning is done from a scaffold slung from I-beam running along above windows

RAILROAD BAY extends along west side and contains a depressed double-track railway spur



OVERPASS leads to plant from 450-car parking lot. Busses discharge and pick up workers at stairs

SERVICE CORRIDOR on mezzanine is reached by overpass. Four stairways lead from corridor to factory floor

FINAL ASSEMBLY LINE is close to wall of continuous sash. Bright paint on ceiling reflects light downward. Fluorescent lighting supplements daylight. Suspended wheel conveyor (upper right) is out of way

● Employees enter the newest Ford assembly plant from the top. The single-story main assembly building of the Hapeville, Ga., plant has a second-floor central portion devoted to employee and plant services. The entire first floor is thus left free for production.

Plant employees enter on the side facing the 450-car parking field, up any of four sets of stairs to an overpass which enters the service section. A 20-ft. corridor bisects the second floor. All employees pass plant protection officers in the corridor to reach locker and wash facilities, then proceed down one of four stairways to the main production floor. The personnel section, hospital, cafeteria, and kitchen are located on the opposite side of the corridor. Two elevators provide service from the main floor to the kitchen and hospital. Second-floor walls are faced with glazed tile. Floors are finished in asphalt tile, quarry tile, or terrazzo.

Assembly Building

Exterior walls of the main assembly building are buff iron-spot brick to a height of four feet above ground, limestone trim, steel sash above, and gunite walls to the eaves. The roof, supported on structural steel purlins carried on trusses, consists of $2\frac{3}{4}$-in. pre-cast concrete slabs, $1\frac{1}{2}$ inches of insulation board, and four-ply roofing felt and slag. Bays are generally 40 by 50 feet. Working aisles are laid out according to flow. Fluorescent lighting is generally used. The plant is of the modified blackout type.

Along the west side of the plant is an interior, depressed, double-track railway spur. Processing of incoming parts takes place as they move across the floor for final assembly on the east side. The assembly line terminates at the northeast corner of the plant. Cars are driven out to the test track from the final line.

Office Building

The office building faces the main highway and is T-shaped. It is separated from the assembly building by an executive garage. Here, again, the general single-story construction with a smaller second-story section is used to good effect.

ARCHITECT: ALBERT KAHN ASSOCIATED ARCHITECTS AND ENGINEERS, INC. DETROIT

KITCHEN GLEAMS with glazed tile walls, stainless steel equipment, and fluorescent lights

FIRST AID ROOM is air conditioned. It has glazed tile walls, terrazzo floors, and acoustic tile ceiling

Added elevation provides a striking, high-ceilinged lobby, with space in the rear for air conditioning and ventilating equipment.

Brick and steel construction is modified by stone trim; central motif is stone. Roof is insulated cement tile, composition covered.

Main entrance has a stone-clad central element and four piers to give the impression of great height. Walls on either side are of stone, while the entrance itself is recessed. Inside the recessed portion, walls are steel encased with aluminum. Frame for the revolving doors is aluminum.

The entrance lobby is monumental in conception—one and one-half stories high, with curved acoustical ceiling and indirect lighting. The north wall is the exterior wall, as described, and the west wall is of similar stone construction, featuring a large mural. Other wall surfaces are bleached mahogany with aluminum trim. Floors are terrazzo.

Along the front of the administration building are executive and general offices, located on either side of the main entrance.

General office partitions are flush-surface metal and glazed type. All ceilings are acoustical tile; floors are asphalt tile. Over the general offices, east of the main entrance, a clerestory or monitor is installed, which permits entry of natural light. By reversing trusses the height of the monitor is kept at a minimum. Glass block was used to full advantage in the monitor walls. Trusses in the ceiling were reversed and the ceiling was splayed to accommodate fans.

In the west portion of the building, accommodations are provided for dealers, including a service school, classrooms, conference rooms, lounge, and washroom facilities. The east side houses the kitchen, office cafeteria, private dining room, and employees' entrance way, in addition to washrooms, lockers, and toilet room facilities. The private dining room is wood paneled.

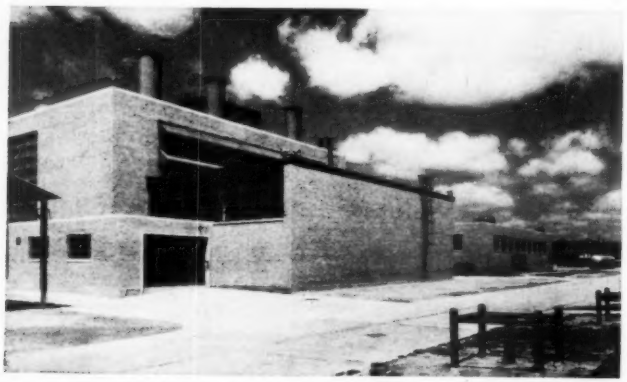
Boiler House

Design of the combined boiler and compressor house incorporates unconventional fenestration which has definite advantages. Unusually large window openings in solid wall surfaces provide an abundance of light along firing aisles. New ventilation treatment has been used, consisting of ventilating sash with elliptical-shaped metal hoods on outside walls.

Architecturally the unit consists of three major elements. The tallest element houses boilers; the intermediate contains compressors; and the smallest houses the engineer's office and service facilities.

The building is constructed of brick and steel. Floor and interior walls are of quarry tile, and equipment bases and curves are ground terrazzo. Grating and concrete platforms are placed to provide easy access to all equipment above the ground floor.

This building is equipped with its own showers, locker room, toilet room, testing laboratory, and engineer's office.



BOILER HOUSE has abundance of light along firing aisles. Building also houses compressors. Metal hoods on ventilating sash are an unusual feature

MAIN ENTRANCE is marked by four slender pillars of stone. Behind entrance is huge lobby

GENERAL OFFICE AREA has splayed ceiling, glass block wall panels, 4-tube fluorescent fixtures

Three-drum boilers, operating at 175 psi., have been installed to produce saturated steam, primarily for heating and process needs. The Atlanta plant burns both gas and oil, with emphasis on the former, which is abundant in that area.

Heating and Ventilating · Steam at 150-lb. pressure is tunneled to the main plant from the boiler house and distributed through mains located in the truss space. Pressure is reduced to 30 pounds for distribution to blast heaters and unit heaters, and to kitchen and cafeteria equipment. Pressure is further reduced to 5 pounds to supply blast heaters in the kitchen, cafeteria, and mezzanine offices.

Offices and cafeteria are heated by wall-hung, enclosed convectors with sloping-top grilles. Locker rooms are heated by cast-iron radiators using steam at 5-lbs. pressure.

The general office building is heated by a forced circulation hot-water system with overhead mains and wall-hung convectors inclosed in furniture-finish cabinets. The main entrance and vestibule are heated by forced-flow air heaters supplied with steam at 30 pounds. A central hot-air system heats the lobby and display room. Water for the office building system is heated by instantaneous, steam-surface-type water heaters supplied with steam at 5 pounds through a pressure regulating valve from the 30-lb. steam system. Condensate from the 30-lb. and 5-lb. steam systems runs by gravity to a condensate pump and receiver unit located at the west side of the assembly building.

All horizontal heating pipe is concealed—for the assembly plant in the truss space, and for the office building in the furred ceiling space. All plumbing piping is also concealed in finished portions of the building.

Offices, cafeteria, and plant hospital are completely air conditioned with equipment capacity rated at 250 tons of refrigeration.

The plant is heated and ventilated by sixteen central supply systems for forced hot air with overhead ducts and grilles. Eight large fan rooms are located on roof trusses. All systems are provided with outside and recirculating air dampers. Air is partially recirculated, and in winter 25 per cent fresh air make-up is added. This is in excess of process exhaust air and creates a desirable slightly higher inside pressure.

Fan units operate in summer with 100 per cent fresh air supply which is exhausted through mechanical roof units. The office building has three central air supply systems, one for the cafeteria and two for the office area.

Electrical System · Primary voltage of 110 kv. is stepped down to 13.2 kv. by transformers in outdoor substations. The 13.2-kv. power is distributed around the property via a network of manholes and underground ducts. There is a master switching station located in the basement of the boiler house. At several substations, a further reduction is made to 460 volts. Power at this voltage is distributed through bus ducts for production equipment; conduit and wire distribution is used for lighting and utility motor power.

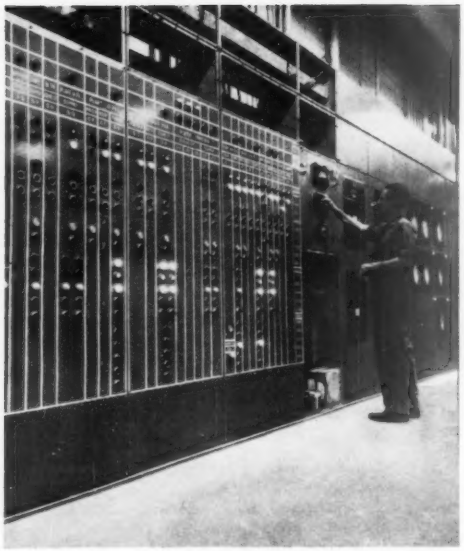
Lighting · The lighting system was designed to allow maximum coverage in any one area. Two-lamp, 40-watt fluorescent fixtures were hung from runs of trolley duct, which are held in place by messenger cable. The trolley duct allows more lighting fixtures to be plugged in to increase the lighting intensity in areas requiring more light. Some 8300 fixtures are used; 58,000 feet of messenger cable and 53,780 feet of trolley duct were installed.

Oil Storage · Explosion-proof lighting and power equipment was installed in the oil houses.

One of the most important auxiliary buildings in the plants is the oil house, used for preparation and storage. Its importance lies in the fact that it minimizes the supervision of oil handling and increases the safety of the entire plant by confining the handling and storage of oils and flammable liquids in a single area, safely isolated.

Fire Protection · The fire protection system consists of an underground loop network of water mains supplying outside yard hydrants, branch leads into the buildings to automatic sprinkler systems, and small hose connection stations. The primary water supply consists of a 250,000-gal. elevated tank 100 feet above grade to tank bottom. Two-fifths of the elevated tank capacity is used for domestic needs, with 150,000 gallons reserved for fire protection.

MECHANICAL SECTION (rear) is physically separated from office unit. Space between is packed with cork and rubber to eliminate noise and vibration



CONTROL BOARD in compressor room provides visual check on operation of apparatus that supplies year-around air conditioning throughout plant

Courier-Journal & Louisville Times Company

NEW PLANT AT LOUISVILLE, KY.

● While appearing to be a single building, the new plant of the Courier-Journal & Louisville Times Company is actually two independent structural units. The front portion, or office section, houses the non-mechanical departments and radio facilities. The rear section houses presses and other mechanical equipment. The purpose of this structural segregation is to keep the noise and vibration of the mechanical section out of the offices and studios. Two inches of space between the two buildings is packed with cork and rubber to eliminate noise and vibration. This joint is continuous between the buildings.

ARCHITECT AND ENGINEER: LOCKWOOD GREENE ENGINEERS INC., NEW YORK

Mechanical Building

The mechanical building measures 186 by 201 feet. Its construction is of flat slab concrete. Its four stories contain 195,000 square feet of floor space with 25-ft. column spacing. Ceiling height is 12 feet. Floors are concrete, wood, and asphalt tile. The roof is a 20-year bonded type, built up of asphalt, plank, and insulating material.

Side walls are of skeleton construction with brick and limestone exteriors and structural glazed-tile interiors. Aluminum projected type sash were used, and partitions are steel and glass, and structural glazed tile.

Ceilings throughout the mechanical building are painted white; walls, cream; doors, sash, and trim, light gray.

Air Conditioning · A mechanical exhaust has been installed for the removal of odors, fumes, and heat from the rotogravure printing preparation, pressrooms, etching, photographic, stereotype, and flat casting departments, and the kitchen, lockers, and toilets. Year-around air conditioning is provided throughout both buildings.

Air conditioning equipment utilizes a double-duct system to minimize summer reheating. Pressrooms are provided with large glass areas for observation from the street. This area is double glazed, with automatic heating be-

FLUORESCENT LAMPS in continuous fixtures supply 80 foot-candles of light at work level. White acoustical ceiling. Glazed tile walls. Wood floor

NEWS ROOM, typical of office work areas, has fluorescent lighting, asphalt tile floor, acoustical ceiling, steel and glass movable partitions

tween the panes to prevent condensation. Relative humidity is maintained in both pressroom and paper storage area. Well water is used to air-condition the pressrooms and is reused in the centrifugal chilled-water system. Eight hundred tons of chilled-water refrigeration and 700 tons of well-water cooling equipment have been installed.

Lighting · Fixtures throughout the building are fluorescent, in general, with one, two, three, or four tubes, as required to obtain the proper light intensity. In the plant fixtures are of the industrial type, although some of the commercial type are used. The composing room has continuous rows of commercial fixtures, with the bottom made of glass instead of louvered. Rows are 8½ feet apart and give an illumination of approximately 80 foot-candles.

Electrical Distribution · Service is obtained from transformers in a vault under the sidewalk. These transformers step down 13.8 kilovolts to 120/208 volts. Two services are brought in through high-reactance buses of 6000- and 8000-amp. rating. Main breakers are 100,000-amp. interrupting capacity, with feeder breakers of 50,000-amp. interrupting capacity. There is also one emergency service from the vault which can be connected to any one of four breakers to sectionalize parts of the load. The main service is tied in with the existing low-voltage city network.

Lighting panels are of the circuit-breaker type. Power panels are of the circuit-breaker type, but where there is a concentration of power, motor-control centers have been used.

One rather unusual feature is a central control board in the compressor room in the basement for indication of the operation of all air conditioning apparatus.

The new plant is well equipped with materials handling facilities. Receiving and shipping platforms are covered. One passenger and two freight elevators were installed. Numerous conveyors for handling of roll and flat newsprint are in use. Conveyor belts carry news and job bundles. A pneumatic tube system has also been installed to speed delivery of messages. Chutes are being used for mail and paper.

Employee Facilities · Some 275 persons can be accommodated in the kitchen, cafeteria, and private dining room in the new plant. Complete toilet and washroom facilities have been provided. These rooms have structural glazed tile walls, terrazzo floors, and metal stall partitions. Locker rooms are provided. A first aid room, an examining room, and two restrooms complete the medical facilities.

Office Building

The office building, situated in front of the mechanical building, measures 137 by 120½ feet. It is of steel-frame and stone construction, with concrete arches. This seven-story building has 131,000 square feet of floor space with column spacing 23 by 21 feet. Ceilings are 12 feet high. Floors are asphalt tile. The roof is 20-year bonded tar and gravel on concrete with fiber insulation. Side wall construction is the same as for the main plant. Interior walls are plaster. Exterior walls are brick and limestone. Sash are double-hung aluminum. Partitions are steel and glass, and plaster. The color scheme is the same as in the main plant.

RAYON TIRE YARN plant was designed with future expansion in mind. Most of its buildings have one or more temporary walls. Although the plant is located in the heart of the TVA region, it generates its own power. Power house (foreground) is served by complete mechanical coal handling equipment

American Enka Corporation

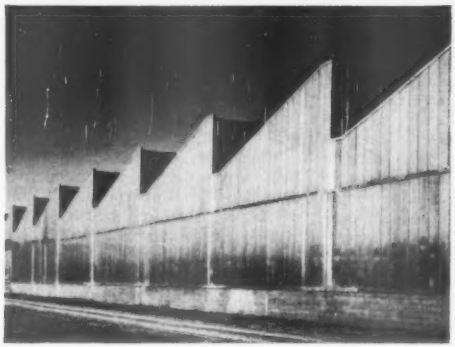
NEW PLANT AT LOWLAND, TENN.

● Flexibility of design came first when American Enka Corporation planned its new plant at Lowland, Tenn. First, the plant had to be designed to meet the exacting requirements of rayon tire cord manufacture. Second, a facility had to be designed that could, at some future date, be considerably expanded. It was consequently important—especially from the standpoint of economy—to devise an over-all plan that would permit the realization of this desire. It was necessary to design buildings and processes that would lend themselves readily to expansion whenever the time came to increase the size of the Lowland operation.

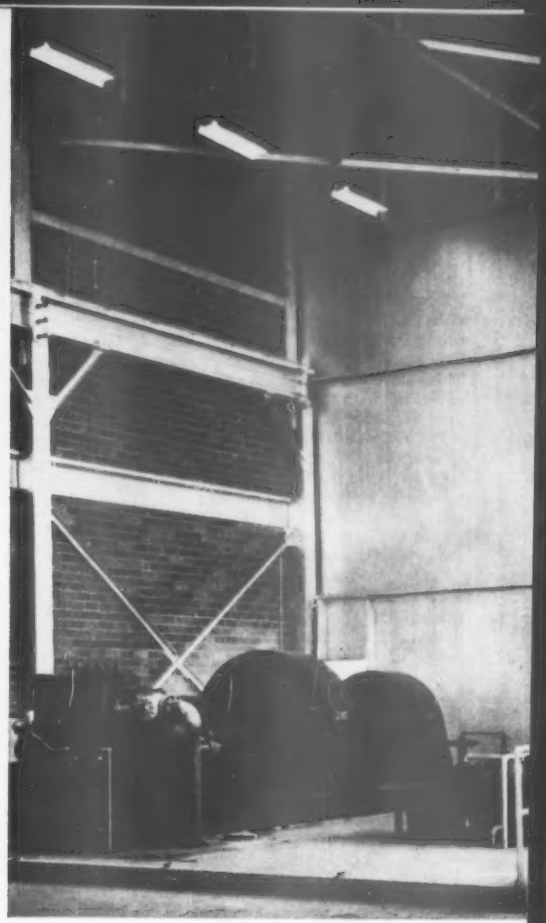
ARCHITECT, ENGINEER, AND BUILDER:
H. K. FERGUSON COMPANY
CLEVELAND

The approach to this problem was to lay out a plant incorporating an organized extension plan. Individual buildings were spaced in accordance with carefully studied future requirements. Plant services were designed into the layout in such a way that they

ALUMINUM SIDING was used for all temporary walls. Here, rear wall of power plant. Siding has same insulating value as a 13-in. brick wall



TEMPORARY WALL of process building can be easily removed when expansion becomes necessary. Aluminum siding is reusable, has high salvage value



HOW WALLS LOOK from inside is shown in view of high-frequency turbo-generator section of power house. Brick wall, left; aluminum siding, right

would not be affected by such future expansion.

For example, railroad sidings were placed along the "permanent" side of the plant and will not have to be removed when additions to any of the existing buildings are made.

Also, aluminum siding was used for temporary wall construction. Attractive in appearance, this type of siding offers many advantages. It can be removed easily and quickly. It can be reused. It has high salvage value. And it provides as much insulation as a 13-in. brick wall. All walls in the direction of future expansion were therefore constructed of aluminum; all others, of red brick. This plan was followed even in the power house.

The design of each of the eleven buildings that make up the plant is totally functional. A distinguishing feature of the plant is the wide use of saw-tooth roof construction. This type of roof was used in order to take the maximum advantage of natural north light, which is so necessary for most effective product control. More than three miles of aluminum sash are used in the roof. The plant is primarily one story, although certain portions are two, three, and four stories high.

Buildings are generally irregularly shaped. All buildings have been designed to suit the process. Steel-frame construction is used throughout. Flexibility in frame construction was also an important consideration. As a result, the design eliminates use of bracing below the saw-tooth valleys.

Special Paint • The presence of moisture and acid fumes in the process building necessitated anchoring the roof deck to the steel frame in such a manner that anchors would not be exposed. It was held inadvisable to weld members of the steel frame because of the difficulty of getting paint to stick to welds. The entire structur-

al steel frame in some process areas is painted with acid-proof paint. All steel in the building has been aluminum painted.

Roof Construction • The roof deck, for the most part, is built of specially designed precast concrete slabs which cover more than 500,000 square feet of roof area. These slabs were designed to facilitate economical erection and were set into place from the top of the roof. This eliminated the necessity of pointing on the underside of individual slabs.

Floors are of reinforced concrete construction, and most of the footings go down 10 to 20 feet below the surface in order to support heavy equipment load. Partitions are of brick, hollow tile, and movable steel, depending upon the process and function.

Fluorescent lighting is used throughout the plant. Intensities vary in accordance with the wide range of processing requirements, with 50 foot-candles provided generally. In certain chemical processing and storage areas the intensity is reduced.

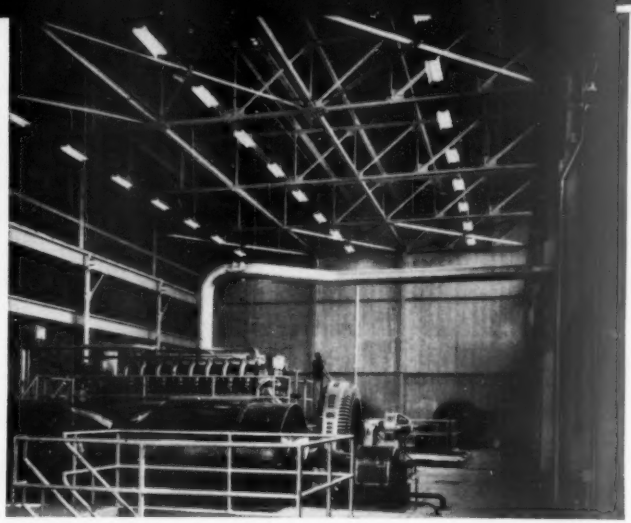
Air Conditioning • Design of heating, ventilating, and air conditioning systems was dictated by process requirements. Various phases of the process differ greatly in treatment. In the spinning room, for example, it is necessary to maintain the atmosphere at a slight positive pressure and to provide an exhaust duct system to prevent noxious gases from reaching equipment-operating personnel. This is accomplished by bringing in a large volume of air (heated in winter) and exhausting a slightly smaller volume through a 200-ft. fume stack.

In the creeling and slashing room, it is necessary to bring in air of high humidity in order to keep room temperature from picking up moisture from rayon yarn. This is done to prevent drying and cracking of the thread. In other rooms it is necessary to hold temperatures constant to within one degree. Static temperature is obtained through use of finned tubing which carries either salt brine or hot water, depending on the outside temperature. Floors, walls, and ceilings are highly insulated. An elaborate system of controls safeguards the plant.

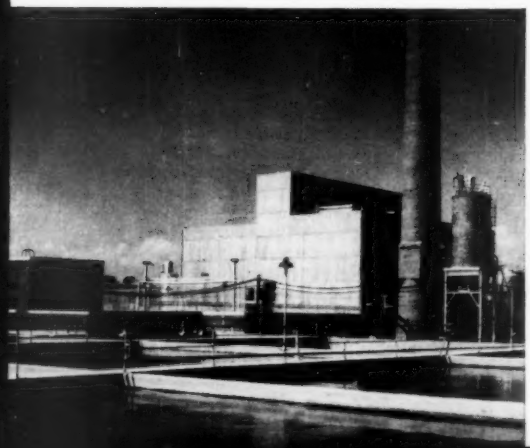
Water Supply • Because water is actually a raw material in the processing of rayon, an adequate supply was mandatory. Approximately 18,000,000 gallons are required daily for the operation of the plant. More than 7,000,000 gallons must be treated to a high degree of purity.

The source of water supply is the Nolichucky River, across which a dam has been constructed at point of intake. A pump house at the river sends water to a 50,000,000-gal. reservoir at the top of the hill in the rear of the plant area. From there it flows by gravity to a filtration plant. Some of this water is softened, and the remainder is used as raw water.

Wastes are disposed of in the river through outlets in the base of the dam. Process water is treated before it is wasted by blending acids with alkali water and through use of settling basins.

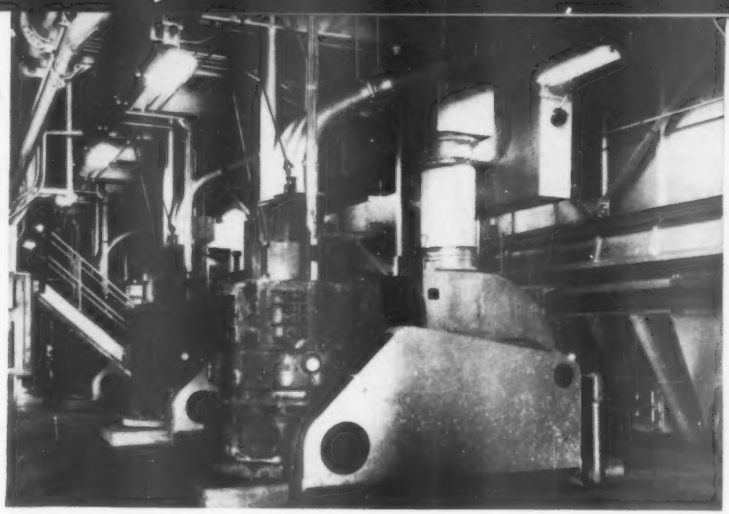


UNINTERRUPTED FLOW OF POWER is assured by two 5000-kw. turbo-generators and one 1000-kw. diesel standby generator



SETTLING TANKS are used in water filtration program; plant requires 18,000,000 gallons daily

VALVE ROOM in filtration plant. Water is pumped from the Nolichucky River, about a mile away



COAL PULVERIZERS process 150 tons per day. Steelwork is aluminum-painted. Fluorescent lighting in three-tube troffers

Power House · The rayon process demands a constant, uninterrupted supply of electrical power. Any failure in the power supply—even though momentary—will cause a shutdown in the operation of the plant. For this reason, a power plant was developed, notwithstanding the fact that the plant is located in the heart of the Tennessee Valley Authority region. Three coal-fired boilers serviced by coal pulverizers produce 30,000 pounds of steam each per hour. Two of the boilers are used in the normal operation of the plant; one is maintained on a standby basis. Part of the steam output is used directly in the process; the remainder is used to drive turbo-generators for the production of electrical power. There are two sets of turbos—one low-frequency, the other high-frequency. The low-frequency installation consists of two 5000-kw. turbo-generators, with one 1000-kw. diesel generator used as a standby. The capacity of each of the three high-frequency turbo-generators is 1000 kva., operating at an adjustable frequency as required by the process equipment.

Included in the power house installation are three refrigeration units, each with a capacity of 250 tons daily. Two of the refrigeration units are electrically driven; the third is turbine-driven.

Electrical distribution lines in the plant are located both in the floors and overhead. Both cable and bus duct distribution lines are used. A wide range of voltage is available, depending on process requirements. Water distribution lines are underground. Steam and air lines are both underground and overhead.

Materials Handling · Adequate materials handling equipment has been utilized. Railroad siding and covered truck platforms are located within buildings. Shipping of the finished product is handled by tracks within the building. Elevators are located according to process needs. Chutes and conveyors have been installed.

Employee Facilities · There are two cafeterias served by a modern kitchen. Tiled toilets, washrooms, and locker rooms have also been provided. Plans have been developed for an outdoor athletic field. Locker rooms for personnel are well lighted and painted. The plant contains a complete hospital in a separate two-story building with approximately 20,000 square feet of space. Well-equipped examination rooms have been provided for pre-employment physical examination. Parking space immediately adjacent to plant is graveled, with concrete roadways.

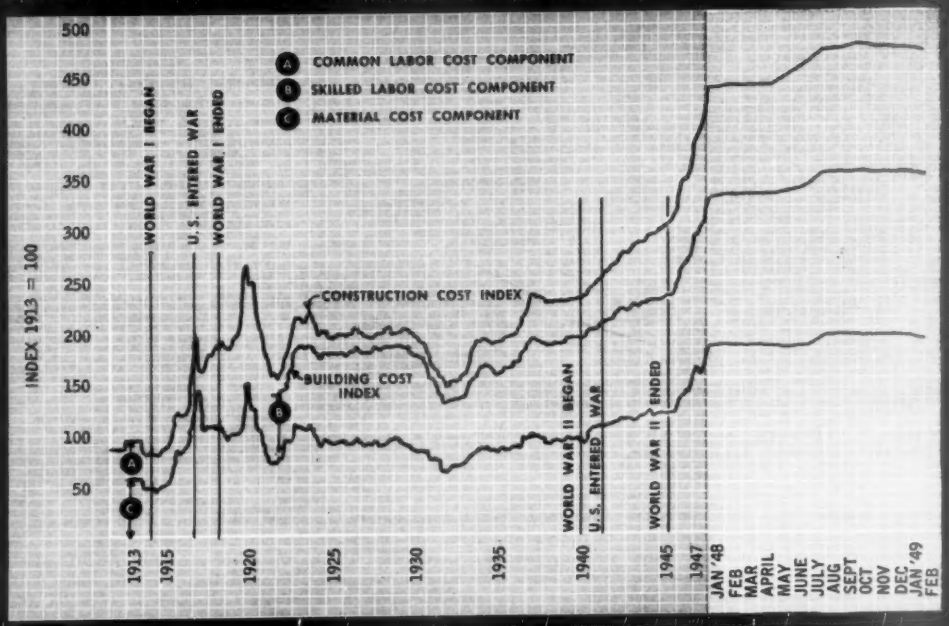
Plant Grounds · Approximately 1200 acres comprise the plant grounds. A chain link fence has been erected around the plant. At the present time a soy bean cover crop is on the grounds. This will be plowed under and planted with grass. All plant roadways are concrete.

Selection of Lowland, Tenn., for plant location was made after a careful study. Availability of large quantities of water, a good labor supply, and proximity to American Enka's parent plant at Enka, N. C., were among the deciding factors.

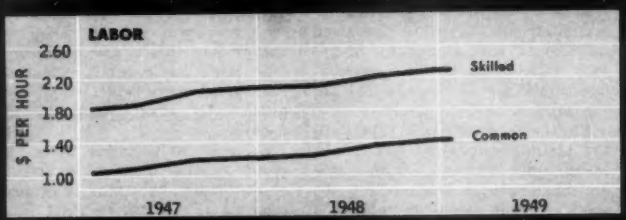
WATER SOFTENERS. For ease of maintenance, plenty of aisle space and headroom were provided

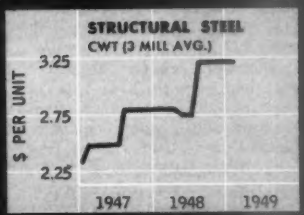
THESE 250-TON COMPRESSORS supply refrigeration necessary for the rayon tire yarn process

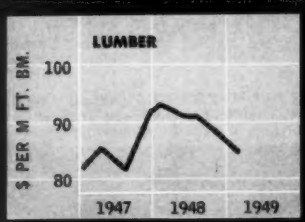
CONSTRUCTION AND BUILDING COST INDEX TRENDS

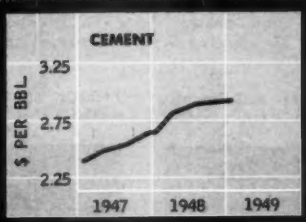


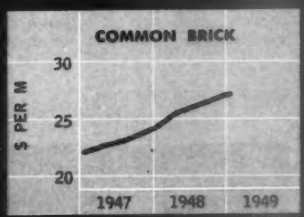
COSTS OF LABOR AND SELECTED CONSTRUCTION MATERIALS (20 cities' average)

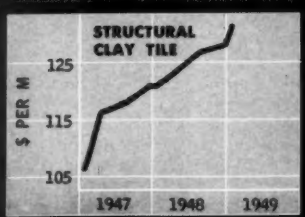


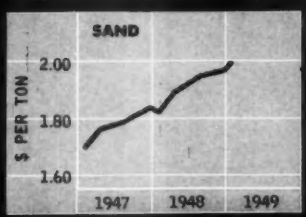












SOURCE: *Engineering News-Record*

Building Materials Outlook

Supplies are easier. Prices are leveling off. Charts (left) show price trends and labor and materials costs. Below is forecast on supply

● Industry is planning to spend $14.1 billion in 1949 on new plants and equipment—5 per cent less than in 1948. With favorable conditions, the actual total may well exceed that figure. Physical volume will probably be slightly off. Yet 1949 will be a better year in which to build than 1948 was. In general, supplies of all important construction materials will be easier. Supply channels are filling. Backlogs are diminishing.

Here is the current outlook for a number of the more important building materials:

Steel · The first six months appear tight. There are still pronounced shortages in reinforcing bars, structural steel shapes, rigid conduit, and fittings. Structural steel seems easier, although builders report wide price movements, depending upon time and place of acquisition. A large producer has stated that the market is equalizing rapidly. The cause is apparently the past record output, coupled with recent large cancellations. Not much in the way of a price decline is anticipated in the immediate future. Wages and costs will prohibit that.

Concrete · Capacity is up. Supplies are generally good. Price is leveling off.

Lumber · Demand is off. Prices on fir, pine, and plywood are off. This is, at present, a bright spot. The structural use of wood in plants has been reported on the decline. Principal competitor is structural steel.

Glass · More glass is being used by industry these days. Capacity has moved up to counter demand. Outlook is good. Specialties may be tight.

Copper · Labor trouble and the government's stockpiling activity are big factors in the copper picture. Output was off in 1948. Because of the demand for radiant-type heating, the number of potential users of copper tubing is increasing rapidly. Prices are comparatively stable.

Aluminum · Tight supply is forecast. The word "critical" has even been used. Causes are no comfort. Increased aircraft production, decreased production facilities, and a power shortage are having an effect. How industrial construction will be affected, no one can say. But more and more aluminum is being used in new plants.

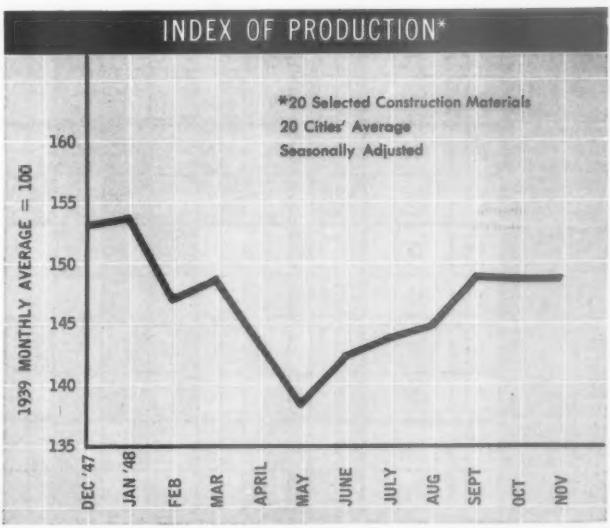
Brick, Clay Tile, Asphalt Roofing · All these are in good supply. Prices are steady. Other materials and equipment included in new plants tend to exhibit a similar speckled pattern with regard to price and supply. Paint, for example, is in good supply, with price steady. Convectors, contrarily, are backlogged 2½ to 3 months. Ready-mix concrete follows cement. It's available at a steady price.

Government Big Factor

Ordinarily, one might expect a tendency in prices to level or decline somewhat as demand catches up. But well-founded predictions are hard to come by now. The government's heightened interest in metals, foreign trade, public housing programs, vast public works, and higher taxes makes even the near future unfathomable. Should corporate taxes go up this year, industry has indicated its projected building program won't materialize.

Several major builders have urged that industrial building be done now. Wage rates are a large factor in building cost, and the trend has been upward (see chart). It is not expected that wage rates will decline. Material prices may lower enough to balance the upward over-all cost trend. This, at best, would produce steady prices.

All in all, it will be a good year to build. Planning will be easier. Costs won't act erratically. Erection time will be shorter. Apprentices in the building trades are moving up to supply additional skilled labor for construction of industrial plant buildings.



What's New in Small Plants

In the pages that follow, FACTORY describes fourteen small and medium-sized plants built during the past year. Major building features and other available information are tabulated in the chart below

● "They had outgrown their old plant buildings." That can be said of most companies that build new plants. It can certainly be said of all fourteen companies whose new plants—or additions to old plants—are described in the pages that immediately follow. And it is in-

PLANT NUMBER (SEE THIS PAGE FOR DESCRIPTION)	NUMBER OF BUILDINGS	NUMBER OF STORIES (P = PLANT, O = OFFICE)	AREA IN 1000 SQUARE FEET	EXPANSION PROVISIONS	CONSTRUCTION: FRAME: STEEL	FRAME: REINF. CONCR. SLAB	WALLS: BRICK	WALLS: CORRUG. ASBESTOS	WALLS: CONCRETE BLOCK	WALLS: TILE	PARTITIONS: BRICK	PARTITIONS: CONCRETE BLOCK	PARTITIONS: GYPSUM	PARTITIONS: PLYWOOD	PARTITIONS: TILE	FLOORS: CELLULAR	FLOORS: CONCRETE	FLOORS: CONCRETE SLAB	FLOORS: TILE	COLUMN SPACING (feet)	SASH: ALUMINUM	SASH: STEEL	SASH: WOOD	SASH: GLARE-RED. GLASS	ROOF: TYPE	ROOF: DECK OR PLANK: MONITOR	ROOF: DECK OR PLANK: CELLULAR	ROOF: DECK OR PLANK: CONCRETE	ROOF: DECK OR PLANK: CONCRETE SLAB	ROOF: DECK OR PLANK: GYPSUM	ROOF: DECK OR PLANK: STEEL	ROOF: DECK OR PLANK: WOOD	ROOF: INSULATION THICKNESS (inches)
1 72	1	1	184		■					■					■		■			80 20		■			FLAT						■		1
2 73	2	1	25			■				■		■			■			■		25 16		■			FLAT				■				1
3 74	1	P1 02	72		■								■		■	■	■			32 20	■	■	■		FLAT		■						1
4 75	3	1		■	■							■			■		■			50 20		■			FLAT						■		1½
5 76	1	1	40		■				■			■			■		■			40 20		■			FLAT						■		
6 77	2	P1 02	117		■										■		■			40 20		■			FLAT				■				1
7 78	1	1	120		■					■					■		■			50 40		■		■		■				■			1
8 79	1	1	145		■					■					■			■		24 24		■			FLAT			■					1
9 80	1	1	25		■								■		■		■			36 20		■	■		FLAT						■		1
10 81	2	1	15		■										■		■			20 20		■			FLAT						■		
11 82	1	2	34		■				■			■			■			■		20 15		■			FLAT						■		1½
12 83	4	1	116		■					■					■		■			24 22		■			FLAT						■		1
13 84	1	1	53		■									■	■		■			20 20		■			FLAT				■				
14 85	2	1	21		■				■						■		■			40 20		■			FLAT						■		

teresting, to say the least, that most of them are still thinking of expansion at some later date; at least one of the buildings has temporary walls that can be knocked out when growing pains begin.

All fourteen companies happen to be located in the Middle West—in Illinois, Michigan, Missouri, and Wisconsin. But FACTORY believes these new buildings are typical of small-plant construction in most other industrial areas.

From available data FACTORY has tabulated construction features and related information. A study of the table below reveals what may be significant trends in small-plant construction, as well as other practices of interest and value to those who plan to build new plants in the immediate future.

For example, examination of the table shows that steel-frame construction was used in thirteen of the fourteen plants. Radiant heating is found in six of them. Every plant has steel sash. Nine plants have air conditioned office sections. Thirteen companies subscribe to the belief that color in the plant is good. Twelve have provided parking space for employees. Only two of the fourteen, however, have made any provision for recreational facilities.

Photographs and condensed descriptions of the fourteen new plants appear in the order in which they are listed on the pages indicated in Columns 1 and 2 of the table below.

	PLANT SERVICES																															MATERIALS HANDLING					EMPLOYEE FACILITIES					GROUNDS						
				HEATING						LIGHTING					VENTILATION		P = PLANT 0 = OFFICE		ELECTRICAL																								ROADS				
TOP-PING					TYPE UNIT														WIRING LOCATION		WIRING TYPE																											
BUILT-UP	TAR AND GRAVEL	INTERIOR PAINTED IN COLOR	HOT AIR	HOT WATER	STEAM	CONVECTORS	RADIANT HEAT	UNIT HEATERS	FLUORESCENT	INCANDESCENT	MERCURY VAPOR	INTENSITY — FOOT-CANDLES	MECHANICAL	NATURAL	AIR CONDITIONING	NOISE REDUCTION	FLOOR	OVERHEAD	BUS DUCT	CABLE	CONDUIT	VOLTAGE DISTRIBUTION	RAILROAD SIDING	INSIDE TRACKS	COVERED PLATFORM	RAMPS	CONVEYORS — CRANES	CAFETERIA	FIRST AID ROOM	PARKING	RECREATION — INDOOR	RECREATION — OUTDOOR	TOTAL ACREAGE	LANDSCAPING	ASPHALT	CONCRETE	CRUSHED ROCK	MACADAM
			■					■			■	22								■		220											5					
	■													■		0	■					220 110							■	■			1¼	■				
■							■					35-72	■		0	0						480				■			■				5½			■		
	■						■					60			0	0						440	■	■	■	■	■						17	■				
							■															220 110											3	■			■	
												25-60			0	0						440 220 110											11	■		■		
												30-50	0									480											8½					
												40			P 0	0						440											20	■				
■												10-35			P 0	0				■		220											2½			■		
												35-50																					4	■		■		
■	■												■	■									■																
■	■														0	P 0						440											46	■				■
												30-40			0	0						208 110											2			■	■	
																						440 220											39	■				

Continued on next page

1. Covel Manufacturing Company

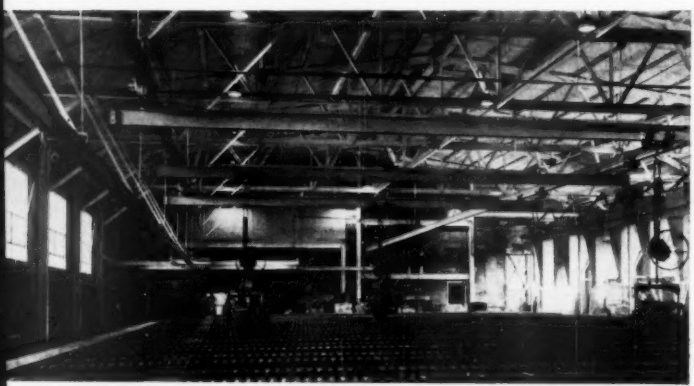
NEW PLANT AT BENTON HARBOR, MICH.

● Mechanization and flexibility of operation were uppermost in the minds of those who planned Covel's new gray iron foundry.

Located adjacent to other plant buildings, the foundry is on a plot of five acres of filled land. Foundations of building, as well as those for heavy machinery, are supported by piling.

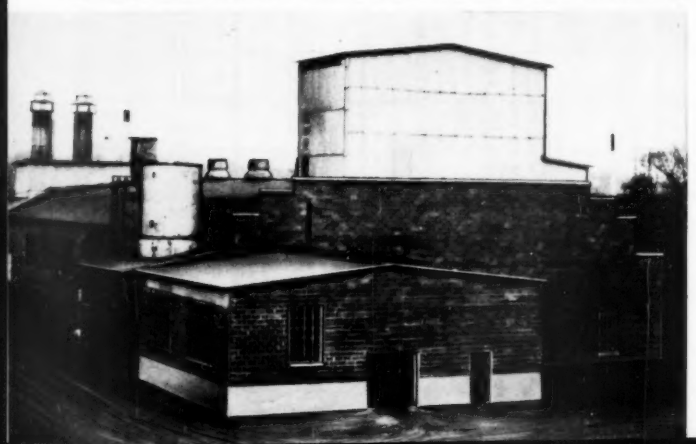
Handling Facilities · Because this is a jobbing foundry, the production system was designed to handle a large variety of jobs. Arrangements were made for patterns to be quickly and easily changed. Two lines of roller conveyors, each 47½ feet long, receive molds from each of the nineteen molding stations. Pouring is done at the end of each line; special cranes cover the entire pouring area. This arrangement requires that there be no supporting columns in the entire interior area of the building. Roof trusses were therefore designed for a full span. The I-beams, which support the pouring cranes, are suspended from the trusses.

Two sand hoppers are located on the roof of the building and have a capacity of 150 tons. The hopper housing has a roof level 55 feet above floor level. Hopper walls are of asbestos sheet; the roof is a steel deck, with one inch of insulation and felt covering.



POURING ROOM is unobstructed by columns. Pouring tables are roller conveyors. Crane-supported ladles are slung from I-beams

GRAY-IRON CASTINGS are made to order in this highly mechanized foundry. Sand hopper for cooling and storage is on roof (foreground)



A railroad siding runs the full length of one side of the building. Heavy materials are unloaded and piled near the cupola charger by a crawler-type crane and magnet. Concrete runways connect the new foundry with existing buildings.

Construction · The foundry is of steel-frame construction, with glazed tile walls and concrete floors. It contains 18,400 square feet of floor area, with a clearance of 22 feet from floor to lowest chord. Concrete floors are surface hardened in all aisles and gangways. The floor has two levels. The lower level, running the full length of the building, is wide enough to accommodate the shakeout conveyor.

Ceilings are painted white, and sand hoppers, overhead sand conveyors, and mixers are painted aluminum. An anti-corrosive paint was used for window sash, steelwork, and roof decking. The exterior surface of the felt roofing is coated with fire-resistant paint.

Plant Services · To solve the ventilation problem, intake pipes above gas sources remove process gas to a large dust-collection unit. Fumes are removed before they spread through the building. In the collection unit, gases are washed so that only clean air is exhausted outside the building. Five 42-in. roof fans constantly change air in the building. Intakes for these fans are located in walls twelve inches above floor level.

Three oil-fired unit heaters, located near the ceiling, heat the building. Heaters are generally used only in the mornings, because heat from castings furnishes most of the building heat needed.

Mercury-vapor lights are used throughout the building. Additional incandescent lighting is provided over each molding station.

ARCHITECT: R. W. ANDERSON
BENTON HARBOR, MICH.
ENGINEER:
KALAMAZOO FOUNDRY AND
MACHINE CO.
KALAMAZOO, MICH.

CUTTING LINE. Workers have selected local lighting to meet needs. Plywood partition bans window glare

SAMPLE ROOM adjoins lobby. Specialized lighting displays company's products to best advantage

WORK formerly done in fourteen different locations has been centralized in this new glassware plant. The company name, in brass letters, will be placed on the brick wall at right of lobby entrance

WHAT'S NEW IN SMALL PLANTS

2. Monogram Glass Company, Inc.

NEW PLANT AT EVANSTON, ILL.

Need for centralization of warehousing and manufacturing facilities dictated the construction of Monogram's new plant. Operations formerly conducted in fourteen separate locations have now been brought together under one roof.

Building Construction · The single-story brick and concrete building measures 180 by 100 feet, with an area of 18,250 square feet. Partitions are of concrete block and gypsum tile. The east wall has a continuous strip of windows with walls six feet high, and the west wall is solid brick, except for ventilating windows. Column spacing is 16 by 25 feet, with a clearance of eleven feet to lowest chord.

The roof is concrete slab with a tar and gravel topping and glass fiber insulation. Interior walls are concrete block. Exterior walls are brick.

Plant Services · An oil-fired boiler feeds steam to unit heaters in the factory. Each unit heater has its own thermostat, so different areas can be kept at different temperatures. By means of a heat exchanger, hot water is supplied to convectors in the office area.

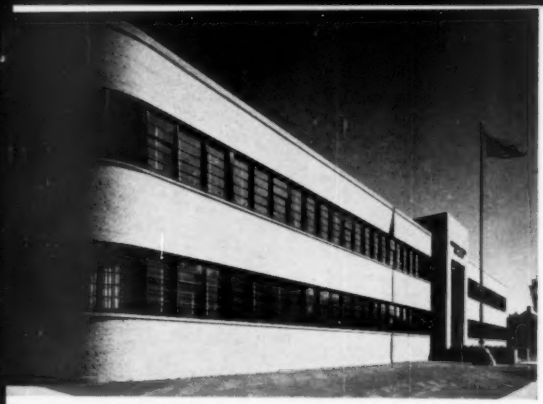
Electric service is 220/110 volt, 3-phase, 4-wire delta. Power and light lines are concentrated on the east side of the building. Distribution is by ducts in floors and overhead. Ventilation of the building is natural, except in the sandblasting room.

Fluorescent lighting is used in the main factory area, with individual lighting for glass cutters and decorators, according to their needs.

Office · Located at the north end of the building, the office contains a reception room, sample room, large office area, and six small private offices. Office ceilings are acoustically treated and have recessed fluorescent fixtures. Floors are asphalt tile. Walls are plaster painted a neutral green.

All recreational and sanitary facilities are in the basement, which contains a large lunchroom, locker, first aid, and utility rooms.

ARCHITECT: JAMES C. SCHNUR, WINNETKA, ILL.



ADMINISTRATION BUILDING is faced with light-colored brick and banded with double row of sash

FLUORESCENT LIGHTING supplements daylighting to insure good visibility at factory work levels

EXECUTIVE OFFICE, flooded with sunlight, is paneled in American walnut, handsomely decorated

GENERAL OFFICE is air-conditioned. Acoustical ceiling and asphalt tile floor are aids to quiet

WHAT'S NEW IN SMALL PLANTS

3. Independent Pneumatic Tool Co.

NEW PLANT AT AURORA, ILL.

● New building for Independent Pneumatic Tool Company provides office space of 40,000 square feet. 35,000 square feet of factory area.

Construction · The building is of skeleton steel-frame construction, with cellular-type upper floor and roof. Exterior is sand-colored brick and Indiana limestone. Main entrance doors are aluminum. Roof is covered with one inch of rigid board insulation. Monitors on factory portion are insulated and fitted with continuous steel sash. Monitor ventilation is controlled from the factory floor.

Office Area · This part of the building is air conditioned. It has radiant heating supplied by coils concealed in the floor. Fluorescent lighting fixtures are set flush in acoustical ceilings. Fixtures in engineering and research departments are set in continuous diagonal lengths to minimize the stroboscopic effect.

Window frames and sash on first and second floors are of wood and aluminum arranged in a continuous strip around the building. Sash is weather-stripped and glazed with insulating-type heat-resisting glass, which also soundproofs the working area against street noises.

General office areas have plastered walls painted in modern colors. Doors and wood trim are of Swedish-finish oak.

Factory Area · Floors in machine shop and factory are covered with 2½-in. wood block. Stockroom floor is concrete. Aluminum paint was used on all steelwork. Unit heaters are suspended from the steelwork. Fluorescent lighting, continuous-troffer type, is at right angles to roof monitors.

ARCHITECT AND ENGINEER:
A. EPSTEIN AND SONS, INC.
CHICAGO

4. The Rapids-Standard Co., Inc.

NEW PLANT AT GRAND RAPIDS

● To make future expansion both possible and easy, one wall of Rapids-Standard's new one-story welded-steel building is composed of insulated steel panels. Other exterior walls are brick; interior, cinder block.

The plant is located on a 17-acre suburban plot. A hill on one side provides parking space for 300 cars.

Construction · The factory floor is reinforced concrete. Over a steel dead-level roof deck is a 1½-in. insulating layer topped with 5-ply tar and gravel.

Factory floor area is 262 by 201 feet, totaling a little more than 52,500 square feet. Power house and paint storage buildings adjacent to main building are 35 by 82, and 22 by 32 feet, respectively. Clearance from floor to lowest chord of main building is 15 feet in the main section and 27 feet in the crane bay. Column spacing is 50 by 20 feet.

Projected steel sash is used throughout. Radiant heating grids located in the concrete floor insure reasonably constant temperatures despite the frequent opening of bay areas. Source of heat is a low-pressure boiler system.

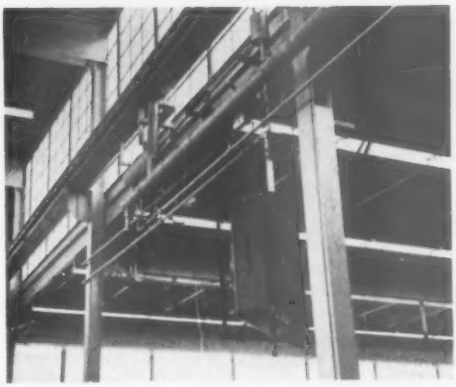
Ventilation in the main building is provided by large window openings, and by an exhaust system in welding areas.

Electrical power is distributed overhead by bus duct. Current supply is 440 volts.

Locker rooms are equipped with showers and semi-circular wash fountains.

Office Areas · This section of the main building is air conditioned and soundproofed with acoustical ceilings. Strip fluorescent lighting yields 60 foot-candles at working level. Floors are terrazzo with rounded corners and bases. Reception and waiting rooms are finished in blond oak. First aid room is close to both factory and office areas.

ARCHITECT AND ENGINEER:
BARKWELL BUILDING COMPANY
GRAND RAPIDS, MICH.



HEAT-EXCHANGER AREA supplies three grids under concrete floor with warm water for radiant heating

INDOOR LOADING DOCK is next to crane bay used for steel storage. Manufacturing area is at right

PLENTY OF ROOM to spread out on this 17-acre suburban plot. Continuous sash of single-story factory area admits maximum natural daylighting. Hillside at rear of plant is terraced for parking

GLASS-WALLED LOBBY occupies corner of administration section. Entrance is set back for protection from weather. Continuous sash in side walls provides ample daylight. Roof holds 2 inches of water

WHAT'S NEW IN SMALL PLANTS

5 · Stecker Paper Box Company

NEW PLANT AT DETROIT

● Complete elimination of a number of obstacles to low-cost operation was the "general order" when Stecker's new plant was being designed. As a result, production is no longer hampered by multi-story operation, decentralized storage of raw materials and finished products, and lack of dust control. The new plant has flexible lighting, ample parking space, convenient shipping and receiving facilities, and is close to all types of transportation.

RADIANT HEAT is good for process, product, and people. Hot water from oil-fired boilers is supplied to 32 grid panels buried in the concrete floor

Plant Construction • The single-story concrete block and steel structure measures 150 by 240 feet, with a total of 35,000 square feet of floor space. Offices and utilities occupy one-tenth of that area. Manufacturing requires 25,000 square feet. The rest is used for storage space.

Frame is of steel columns, beams, and bar joists. Bays measure 25 by 33 feet. Metal deck, covered with 1-in. rigid insulation and a built-up tar and slag coating, gives the plant a substantial roof. The roof holds two inches of water for insulating purposes.

The L-shaped storage area consists of two 40-ft. clear span bays, one across the entire rear of the plant for raw materials storage. The other bay, for finished goods storage, runs along one side of the entire building.

Plant Services • The concrete floor is divided into 32 grids, each 17 by 33 feet. Each grid constitutes a radiant heat panel. Hot water is supplied by oil-fired marine-type boilers—one in mild weather, two in cold. Ventilation is by gear-operated windows.

Natural lighting is supplemented by fluorescent lights. Two-tube troffers are supplied with power from a trolley duct system.

Interior walls are cinder block, painted sunlight yellow and green. Ceilings are aluminum-painted. General offices are painted green and have acoustical tile ceilings. Executive offices are comb-grain plywood paneled. Office floors are asphalt tile.

ARCHITECT AND ENGINEER:
JAHR & LYMAN, DETROIT

6. Korhumel-Heffron & Preiss Steel Company

NEW PLANT AT EVANSTON, ILL.

● This new plant was designed to provide modern facilities and to allow for expansion.

The building contains 94,880 square feet of floor area in the manufacturing section and 22,500 square feet in the office.

The plant is adaptable to expansion by adding standard 40-ft. crane bays on the south end. Underground plumbing provisions have been made for future installation of a shop and office cafeteria.

DISTINCTIVE LOBBY bisects office section of this attractive new plant. Continuous sash around building lets in maximum natural light

LOADING DOCK accommodates eight trucks at once. Raw material from flat bed truck (right) is unloaded and moved to storage by overhead crane

Factory · The manufacturing area is divided into 20x40-ft. bays. The 40-ft. dimension runs east and west, and each bay contains a 5-ton, top-running overhead crane going the complete length of the building. Included in the building are two spur tracks for loading and unloading railroad cars. Eight inside loading docks are provided for trailer trucks.

Raw materials enter the building by railroad car or truck and move by overhead crane to the storage area or directly to the manufacturing section. The finished product leaves the building at the east end, providing straight-line flow of materials.

The factory section of the building contains locker rooms, toilet rooms, and shower facilities for 300 employees. Skylights in each bay permit entry of additional natural light above that provided by continuous sash around the building.

Building Services · All service lines, including those for steam and water, run through the web of factory columns. All branch lines are above the line of roof girders to provide the maximum possible clearance for cranes. Distance from floor to lowest chord is 22 feet, 3 inches. The tar and gravel roof covering the building has one inch of glass fiber insulation and a poured gypsum deck on steel purlins.

Boilers are oil-fired. The factory section is heated by down-flow unit heaters on a low-pressure vacuum-steam system.

Office · The office section adjoins the manufacturing area and is of two-story construction. The first floor is four feet below ground level. It contains locker rooms, restrooms, toilet facilities, storage vaults, and space for air conditioning, heating, and other equipment. A system of steel underground wiring ducts provides outlets every two feet for office machines and telephones. Both floors are air conditioned.

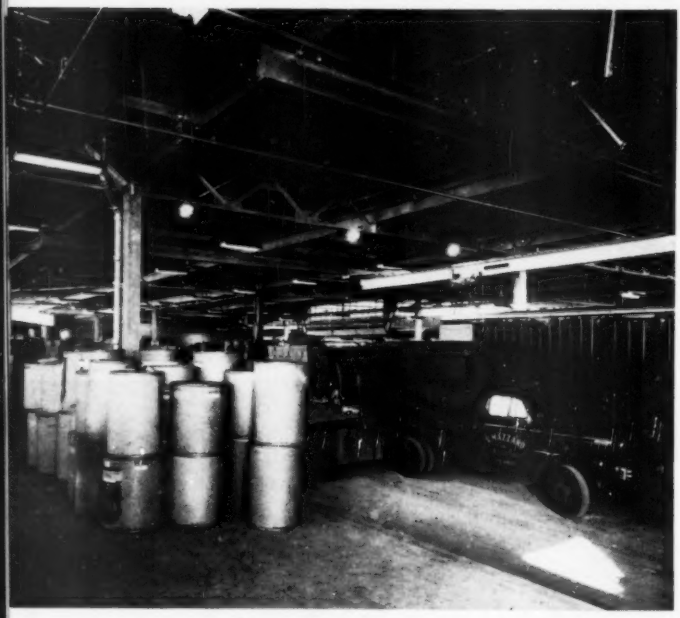
Metal acoustic-pan ceilings are suspended from roof frames in the office to conceal air ducts and piping. Offices have fluorescent fixtures which provide a minimum of 60 foot-candles of light.

Two sides of the reception lobby are made entirely of glass running from floor to full height of 2-story entrance tower. Lobby has quarry tile floor and solid glass doors.

ARCHITECT AND ENGINEER:
FOX & FOX, ARCHITECTS & ENGINEERS, CHICAGO

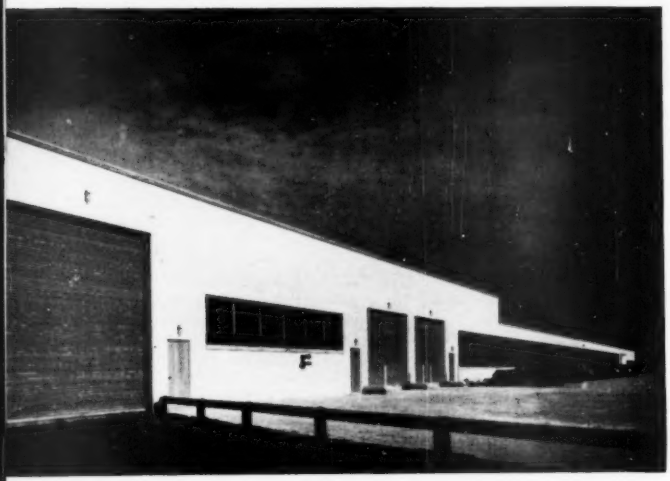
7. Federal Tool Corporation

NEW PLANT AT LINCOLNWOOD, ILL.



TRUCK PLATFORM is raised to tailgate level. Ramp leads to it from factory level. Boxcars (left) are on inside spur track

PLANT SILHOUETTE is low and functional. Truck and railway entrances are shown. Doors are equipped with airlocks for worker comfort



● Back of Federal Tool's new plant lay the need for facilities that would make possible the mass production of kitchen utensils at low unit cost.

The plant contains 120,000 square feet of floor area. Dimensions are 490 by 250 feet. A plot of 8½ acres of ground provides the company with room for future expansion. There is a black-top parking space for employees and visitors.

Building Construction • The building has a structural steel frame, a poured gypsum roof deck with insulation, and brick side walls. Interior walls are common brick; exterior walls are face brick with stone trim. A monitor section in the roof has all sash fitted with glare-reducing glass. Sash in sidewalls is continuous.

Flooring in the factory area is wood block set on concrete. Columns spacing is 40 by 50 feet.

Plant Services • Unit heaters are used in factory areas. Two boilers, continuous fired, provide steam for heat. The plant is completely sprinklered. Fluorescent lighting is used throughout—30 foot-candles in the factory, 50 foot-candles in all the office areas.

Electrical distribution is overhead. Cable is used for lighting circuits, and bus duct for power circuits. Power comes in at 480 volts. Lighting circuits are supplied with 208/120 volts, reduced from 480 volts through transformers at the lighting panels.

Office • General offices, consisting of a large general office area and several private executive offices, are located at one end of the plant. Offices have asphalt tile flooring, acoustical tile ceilings, fluorescent lighting, plastered walls painted gray, and a ventilation installation with provision for future air conditioning. A split system of hot-air and hot-water radiation has been installed in the office area.

ARCHITECT:
SHAW, METZ & DOLIO
CHICAGO

EYE APPEAL is stressed in the design of this cast granite and aluminum entrance. Although ultra-modern, it blends well with remainder of plant. Planting of low ornamental shrubs adds to attractiveness

WHAT'S NEW IN SMALL PLANTS

8. Baxter Laboratories, Inc.

NEW PLANT AT MORTON GROVE, ILL.

● Growing pains and need for more efficient facilities caused Baxter Laboratories, Inc., to build its new air conditioned plant. It was designed around a straightline production system for the company's many pharmaceutical products. Exterior walls are face brick, with cast granite at the entrance.

A 20-acre plot of ground provides ample space for expansion and recreation facilities. A 200-car parking lot is provided for employees.

Building Construction • This one-story plant is constructed of steel columns, roof girders, and purlins. Pre-cast concrete slabs, one inch of insulation, and a bonded coating of tar and gravel comprise the roof.

Main factory dimensions are 320 by 336 feet, with an executive office wing 60 by 180 feet. Steel sash is used throughout the factory building.

Column spacing is 24 by 24 feet, with a clearance of 16 feet, 7 inches from floor to lowest chord. Floors are concrete-base slab, with a heavy-duty concrete topping in the general factory area. Acid-proof tiling is used in all wet areas. Toilet floors are terrazzo; office floors are asphalt tile. Interior walls of manufacturing area, laboratories, toilets, and locker rooms are glazed tile.

General offices are plastered. Wood beams are used in executive offices. There are acoustical ceilings in offices and cafeteria.

Plant Services • Unit heaters warm the factory area. Office areas have recessed convectors. Floor-type radiant heating is installed in reception room, conference room, and executive offices.

Industrial fluorescent fixtures furnish light to the factory area. Offices have recessed fluorescent fixtures. Storage areas have incandescent lighting. A minimum of 40 foot-candles is maintained throughout.

Truck docks on opposite sides of the plant are used for receiving and shipping. A six-car spur track is located inside the building.

ARCHITECT: FRIEDMAN, ALSCHULER & SINCERE
CHICAGO

LOBBY INTERIOR carries through the impression made upon the visitor by the entrance

LIMESTONE ENTRANCE, set in long, low, light brick wall with continuous sash, gives new Rubank plant a modern functional appearance. With landscaping, it's an attractive addition to the community

AIR CONDITIONED OFFICES are well lighted and equipped for efficient operation. Floors are asphalt tile

RADIANT HEAT PANELS in floor keep plant comfortable. Wide aisles help speed flow of work

WHAT'S NEW IN SMALL PLANTS

9 · Rubank, Incorporated

NEW PLANT AT CHICAGO

● Constant business growth demanded expanded facilities for this music publisher. The single-story plant provides more than 25,000 square feet of space.

A large plot of land has been acquired directly north of the building, and present construction allows for expansion in that direction.

Building Construction · Exterior walls are of light-colored face brick and cut-stone trim, with Indiana limestone entrance. Interior walls are common brick. Construction is of skeleton steel frame, girders, columns, purlins. Roofing is composed of ½-in. dense wallboard, 2½ in. gypsum board, ½-in. fiberboard insulation, with composition topping.

The building measures 140 by 180 feet, with a column spacing of 20 by 36 feet. Clearance from the floor to the lowest chord is 11 feet, 2 inches. Floors are 6-in. concrete, with a steel trowel finish. Wire mesh reinforcement has been used. Sash is double-hung wood on street elevation and commercial projected steel at the main entrance. Partitions are concrete block in the warehouse. Gypsum tile and plaster have been used in offices. The entire plant has been painted in varying colors.

Plant Services · Steam for heating purposes is supplied to unit heaters in the warehouse. Radiant floor panels, fed by hot water, supply heat in offices and workrooms. Industrial-type fluorescent fixtures are used in workrooms. Recessed fluorescent troffers are used in private offices. Surface-mounted fluorescent fixtures are used in general offices.

Power requirements are small, principally for unit heaters, air conditioning, and lighting. Distribution is by overhead cable, 220-volt, three-phase, for power; 220/110 volts, single-phase, for lighting.

Offices and workrooms are air conditioned.

ENGINEER: A. EPSTEIN AND SONS, INC.
CHICAGO

10 · "Automatic" Sprinkler Corp. of America

NEW PLANT AT CHICAGO

● Location of new manufacturing facilities near a major distribution area was the basic reason for construction of "Automatic" Sprinkler's new one-story plant in Chicago. Sprinkler equipment built in this plant will be distributed in the Middle West.

The new plant consists of a manufacturing area 81 by 116 feet and an office area of 41 by 102 feet, both buildings adjoining. A 4-acre plot of ground allows for possible future expansion.

A large parking area for employees is provided at the rear of the plant.

Railroad and truck facilities were installed for loading and unloading of materials. The plant was designed around an efficient straight-line production system.

Building Construction · Built of steel, concrete, and brick, the plant has approximately 15,000 square feet of floor area. Column spacing is 20 by 20 feet. Clearance from floor to lowest chord is 16 feet.

Floors throughout the manufacturing area are of 6-in. concrete, surfaced with a floor hardener. The roof is constructed of steel bar joists covered by two inches of poured gypsum.

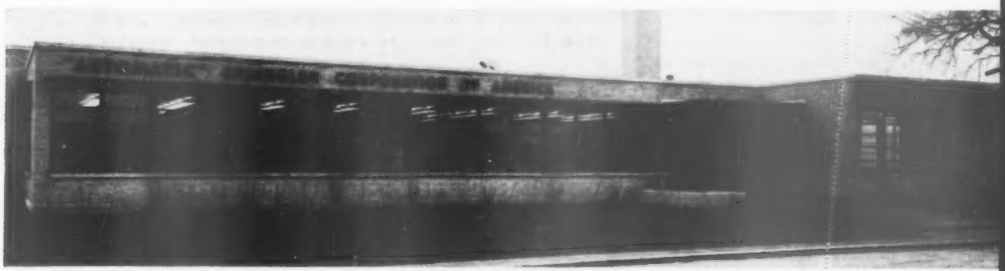
The office building has a face-brick exterior with brick and plaster interior walls. Office ceilings are false, having been constructed of acoustical blocks to deaden noise.

ARCHITECT AND ENGINEER:
MONROE BOWMAN AND ASSOCIATES
CHICAGO

Walls are a light gray-green. Floors are black marbleized asphalt tile. Doors are natural birch.

Plant Services · An oil-fired boiler with a forced hot-water system supplies unit heaters in the factory. Direct radiation is used in the office building. Industrial fluorescent lighting fixtures in the manufacturing area produce a minimum of 35 foot-candles; recessed fluorescent troffer fixtures supply 50 foot-candles in the office building. Mechanical ventilation is provided in toilet zones.

Electrical distribution lines are mounted overhead in the factory and above the false ceiling in the office buildings. An underfloor duct system in the office carries telephone and electrical outlets.



LOCAL MANUFACTURE for the Chicago distribution area was "Automatic" Sprinkler Company's aim in building this plant. Extensive use of glass characterizes the front exterior of the building

GLASS-LINED LOBBY makes an attractive and distinctive entrance. Canopy over doorway gives protection

PRODUCTION AREA has natural light, supplemented by fluorescent ceiling fixtures for adequate illumination

11. Seventh Day Adventists

NEW PLANT AT HOLLY, MICH.

● The new woodworking mill at Adelphian Academy, Michigan Conference of Seventh Day Adventists, Holly, Mich., was designed and built to give students modern working facilities and to increase production capacity. The building consists of two stories (one in front, two in rear), with an approximate floor area of 36,000 square feet. Products are garden trellis items.

The mill is commercially operated for the training and support of students attending the school. Approximately 70 male and female students work from two to four hours a day and earn a substantial part of their school expenses.

The mill building, 240 by 62 feet, with an office wing 30 by 90 feet, is located on a 20-acre campus.

Layout and Handling · Raw materials enter the two-story building's first floor by railroad spur or by truck. The railroad spur extends 85 feet into the building from the north end. Trucks enter the building through large sliding door on the east wall.

Semi-finished products are raised 18 feet by hydraulic elevator to the second floor, where they are suspended from overhead monorail and moved through the paint room. Finished products to be shipped by rail slide down a metal chute to the interior railroad spur extension. Finished products to be shipped by truck are moved directly from the second floor to the canopied loading platform on the west side of building.

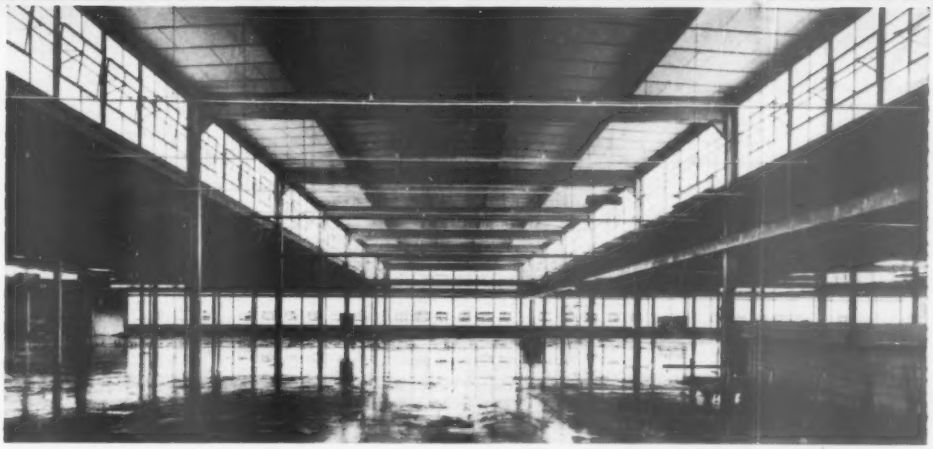
Building Construction · General construction is steel frame, with concrete block walls and partitions. Column spacing is 15 by 20 feet. Reinforced concrete slabs form the first floor. Steel-decked panels are used for the subfloor and concrete-finished flooring on the second floor and mezzanine. Ceiling heights vary—16 feet for the first floor and 11 feet, 8 inches for the second floor. The roof is steel-decked, with a three-ply asphalt and felt covering. Roof insulation is 1½-in. fiberboard. Fluorescent lighting is used throughout the plant, with open-end units in manufacturing and storage areas and explosion-proof units in the paint room.

The plant uses mechanically circulated hot-water heating, with radiators in office areas and toilets, unit heaters in factory areas. All electrical distribution lines are mounted overhead in rigid conduit. Service lines carrying water are located in underground floor slabs, with branches to fire risers and toilets.

WOODWORKING MILL gives Seventh Day Adventist students modern working facilities. Economical construction was used throughout

MILL AREA before lighting fixtures and electrical distribution lines were installed. Work tables at right hold assembly fixtures

ARCHITECT AND ENGINEER:
CHARLES W. NICOL AND ASSOCIATES, CHICAGO



WIDE MONITOR with ventilating sash helps make plant comfortable. Glare-reducing glass was used in all continuous sash exposed to direct sunlight. Three such monitor bays admit much natural light

RADIANT HEATING was installed in office and plant to compensate for localized heat loss

FRONT ENTRANCE combines marble, Indiana limestone, and buff face brick with aluminum doors and trim

WHAT'S NEW IN SMALL PLANTS

12. H. M. Harper Company

NEW PLANT AT MORTON GROVE, ILL.

● Good plant layout for efficient production. Economical construction. Early occupancy. These three basic objectives were kept in mind during the early planning stages and throughout the erection of the new Harper plant.

Building Construction · The manufacturing building contains approximately 95,207 square feet and is situated, with four other buildings, on a 46-acre tract.

Construction is of steel frame, with brick walls. Partitions are lightweight block and hollow clay tile. Fluorescent lights are used throughout the plant. Both office and plant sections have acoustical ceilings.

Column spacing is 22 by 40 feet in low bay areas and in monitor bays. Projected steel sash were used on outer walls. Continuous steel sash with mechanical operators were provided in all monitors. All sash exposed to direct sunlight have glare-reducing glass.

The roof is built up of 1-in. board insulation, two inches of poured gypsum, and felt, tar, and gravel. Gutters, downspouts, and flashing are copper.

The plant uses a combination of forced-flow hot water heat and low-pressure steam heat. Offices are air-conditioned for summer and winter. A large portion of the office area is exposed to north and east winds, and in order to counteract this condition during winter months, copper-tube radiant heating was installed in concrete floors adjacent to these exposures. This type of heating is also used in some factory areas. The rest of the factory has unit heaters. A high-pressure boiler is used, in addition to two boilers for process steam and hot water.

ARCHITECT: ARTHUR M. HEDA, CHICAGO

13. Grinnell & Company, Inc.

NEW PLANT AT ST. LOUIS

● Efficient handling and storage of a complete stock of Grinnell products was provided for in the design of this new plant, a single-story structure, 195 by 280 feet, with an area of 53,000 square feet.

Building Construction · Construction is steel frame, with brick and corrugated asbestos walls. Side walls are concrete block, with face brick exterior. A continuous band of steel sash is set above the face brick. Space between the sash and the roof is closed with sheets of corrugated asbestos.

Columns are spaced 20 feet on center, with the exception of a 50-ft. section along the north wall. The roof in this section, which runs the length of the building, is truss-supported. This area includes an interior railroad siding and an adjacent pipe storage area. It is serviced by a 3-ton electrically operated overhead crane with a magnetic lifting bar.

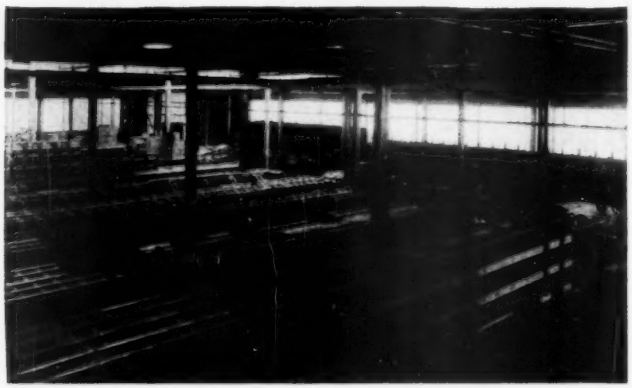
A vertical clearance of 19 feet from floor to bottom chord is maintained throughout the building. Because of heavy traffic, an integral hardener was used on the entire concrete floor area.

Roof construction is of 4-in. thick pre-cast concrete slabs laid on steel purlins, with a tar and gravel covering. Lighting in the warehouse and fabricating areas is incandescent. Roof monitors and steel sash provide adequate natural light during the working period. Exterior lighting is obtained by the use of floodlights, mounted just below the roof on the sides of the building.

Monitors are equipped with motor-operated sash to increase ventilation. A central oil-fired boiler provides steam for unit heaters. Electrical distribution is overhead in conduit.

The plant has a 250-ft. interior railroad siding and interior trucking facilities 60 feet long.

Employees in the fabricating shop and warehouse are provided with a locker room, showers, wash fountain, and toilet facilities. Water coolers are conveniently located throughout the building.



INTERIOR RAILROAD SIDING (in background) runs the entire length of the building. Individual thermostats at unit heaters permit sectional control of temperatures. All service lines are carried overhead

OFFICE ENTRANCE has protective canopy, window box for shrubs. Large doors at right are for truck dock. Customers park here

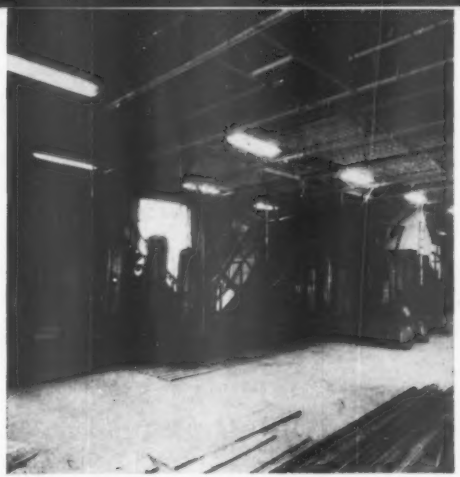
Office · The entrance lobby has polished plate glass and exposed brick walls. The company seal, cast in aluminum, is mounted on polished copper fins and tubing as a decorative feature on the exposed brick wall of the waiting room.

Office floors are covered with asphalt tile laid on concrete. Ceilings are acoustical plaster. Surface-mounted fluorescent fixtures are used in the office for lighting. Electrical and communication service is provided by an under-floor conduit system laid in a cross-grill pattern, nine feet on center.

The office area is air conditioned by two self-contained air conditioning units. During the summer, when cooling is required, both units function. During the heating season, one unit supplies tempered, humidified air to all office areas. Additional heat is supplied by steam-heated recess radiators.

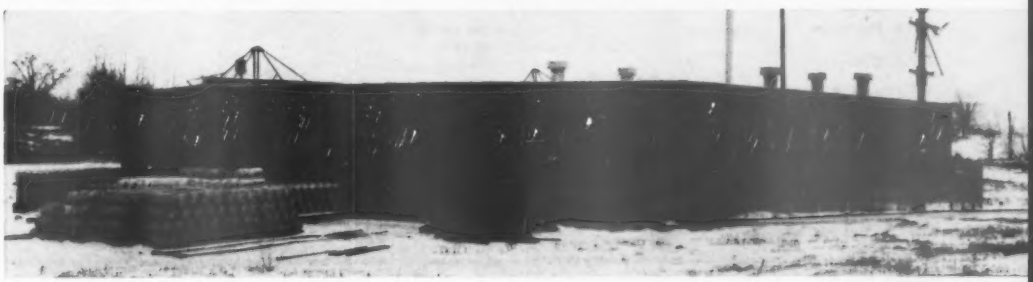
Customer parking is on a concrete apron, 40 by 60 feet, located in front of the building. A finished driveway, 16-ft. wide, is laid to the rear of the building, where a black-top area, 90 by 100 feet, provides space for employee parking.

ARCHITECT: P. JOHN HOENER
ENGINEER:
WILLIAM C. E. BECKOR
ST. LOUIS, MO.



TROLLEY CONVEYOR moves heater tanks in and out of dip tanks set in factory floor

SIMPLE OFFICE BUILDING is faced with cut stone, glass block, and metal trim mold



EXTERIOR VIEW shows tank storage area in rear. Plant side walls are concrete block with face brick exteriors. Roof is metal deck. Ventilators on roof aid in removal of fumes and exhaust gases

WHAT'S NEW IN SMALL PLANTS

14. White Products Corporation

NEW PLANT AT MIDDLEVILLE, MICH.

● New factory and office buildings complete the White Products expansion program. Plant layout was developed for straightline production of electric water heaters.

Building Construction · Side walls of the new plant are constructed of concrete block with face brick exteriors. Steel I-beams support roof joists. Column spacing is 39 by 20 feet. Height from floor to bottom chord is 16 feet, 5 inches. Floor area in the factory building measures 18,500 square feet. Concrete has been used throughout for floors.

Steel trusses support a metal roof deck, which is topped with tar and gravel. Steam-fed unit heaters are mounted above and between trusses. Electrical distribution is by means of bus duct located just under trusses. Current for the factory is 440 volt, 3 phase. Industrial fluorescent fixtures are hung flush with bottom truss chords.

Steel sash, with ventilating panels, have been used throughout the plant. Roof ventilators were installed for fume removal.

Component-parts fabrication and assembly take place in another multi-story building, while final assembly is done in this plant. A trolley conveyor loops over various dip tanks along one side of the plant. Five railroad cars can be loaded simultaneously on a siding adjacent to the plant.

Office · Glass block, cut stone, and metal trim mold were used in construction of the office. Side walls are brick. Floors are asphalt tile over concrete.

Steam-fed unit heaters are located in the ceiling. Surface mounted fluorescent fixtures use 220-volt current. The office building frame is steel. Floor area in the new office is 3000 square feet.

ARCHITECT AND ENGINEER:
WALTER WEELMAN, MIDDLEVILLE, MICH.

CHECK LIST FOR PREVENTIVE MAINTENANCE

1. Foundations
- Walls
- Piers
- Backfilling

2. Floors
- Joists
- Bridgings
- Aisles

3. Side Walls
- Sills and lintels
- Parapet walls
- Coping
- Windows
- Doors
- Exterior surfaces
- Trim

4. Platforms

5. Canopies

6. Structural Members
- Steel
- Concrete
- Wood

7. Interior Surfaces
- Walls
- Ceilings
- Columns
- Partitions
- Fire doors
- Windows
- Doors
- Stairways
- Elevator shafts

8. Interior Equipment
- Lighting fixtures
- Plumbing and piping
- Heating systems
- Dust removal equipment
- Sanitary facilities
- Locker and washrooms
- Drains and sewers
- Firefighting equipment
- Guardrails
- Air conditioning system
- Structurally attached materials handling equipment

9. Roof
- Insulation
- Flashings
- Conductor heads
- Gutters
- Deck
- Roof covering

10. Roof-Mounted Structures
- Skylights
- Monitors
- Stacks
- Ventilators
- Cyclones
- Water tanks
- Signs
- Penthouses
- Railways

11. Yard Equipment and Structures
- Pavements and driveways
- Landscaping and trees
- Small buildings
- Walks
- Hydrants
- Water tanks
- Sewers
- Tunnels
- Overhead pipe lines
- Fixed materials handling equipment
- Railroad tracks
- Platform scales
- Fences
- Recreation sites
- Traffic markers and signals

New or Old—All Plant Buildings Need Preventive Maintenance

Check list above and maintenance tips on pages following will help you keep plant buildings in top condition at all times

● Plant buildings begin to deteriorate immediately after erection. Therefore, even new plant buildings need periodic inspection and planned maintenance follow-up to keep them in good condition.

Building maintenance costs more the longer it remains undone. Little jobs become big ones. Now is a good time to tackle pending maintenance jobs as well as any that have been deferred. The materials outlook is fairly good with respect to price and supply. Therefore, maintenance done now can easily be justified in terms of cost. Little will be gained by putting off the job in anticipation of further price declines. Much is to be gained in employee efficiency and morale.

Those responsible for plant maintenance should be prepared to answer these questions:

Is this plant in first-class condition? If not, what is required to put it in prime condition?

In order to answer these two questions, periodic inspection, under a preventive maintenance plan is a "must."

To facilitate establishment of a preventive maintenance program, FACTORY presents the above check list of the most important elements of plant buildings and yard structures. This list can be adapted to the needs of any plant.

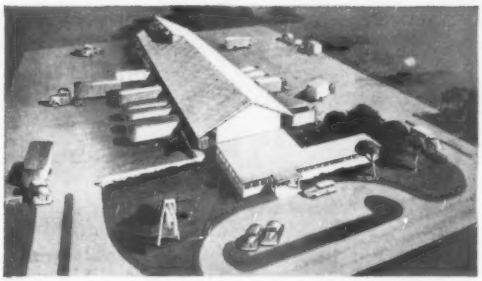
Turn page for tips on Preventive Maintenance

How you can cut your building costs without "cutting corners"

WHEN YOU SPECIFY Standard Buildings by Luria, there's no need to compromise on your building design—to take something that's "almost right" and try to make it do. For Luria's standard line is so complete—and so flexible—that your *precise requirements* can easily be met, for anything from a truck terminal to the heaviest type of industrial building. The wide range of sizes, optional features, accessories and collateral materials gives you unlimited freedom of building design and architectural treatment.

Luria buildings don't cut any corners on *quality* either. They are *permanent*, heavy steel-frame structures designed to meet the most exacting building codes. Yet they cost little or no more than light-weight "temporary" buildings. What's more, Luria buildings are *available now!*

For the complete story, mail the coupon below for our new 20-page catalog on Standard Buildings by Luria.

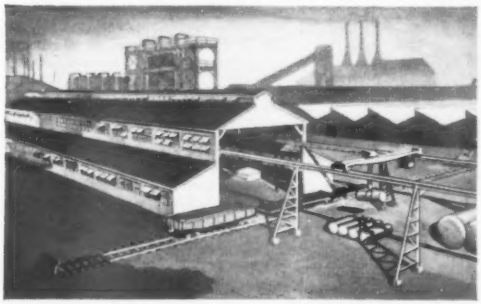


THIS MODERN truck terminal shows how ideally Luria buildings are suited to all types of factory shipping-room and transfer facilities.

IF YOU NEED new warehouse space, Luria can meet your exact requirements—by the square foot, or by the acre—all from a standard line.

USED SINGLY or in any multiple arrangement, Luria buildings are adaptable for anything from a small shop to a complete industrial plant like this.

BY PLANNING your new factory around Standard Buildings by Luria, you can get *exactly* what you want—without paying a premium for special engineering.



EVEN THE HEAVIEST TYPE of industrial buildings are now standard with Luria, as illustrated by this steel fabricating plant with extended crane runway.

Standard Buildings by LURIA

LURIA ENGINEERING CORPORATION
500 Fifth Ave., New York 18, N. Y., Dept. FA16

Gentlemen:
Please send me a copy of your new catalog.

NAME.....

COMPANY.....

ADDRESS.....

CITY..... STATE.....

OFFICES IN ATLANTA, BOSTON, CHICAGO, PHILADELPHIA, PITTSBURGH, WASHINGTON, D. C.

To better serve the Fire Protection needs of the great Mid-West with "Automatic" Sprinklers

HERE'S important news for owners of industrial and commercial properties in and around the great Middle West. *"Automatic" Sprinkler*, pursuing its policy of continued expansion, has recently opened a new Chicago plant, pictured above, where facilities now enable us to offer fire protection engineering, construction and maintenance service on a vastly improved basis. And, this is but one of several new plants of this type that are being located in strategic areas throughout the Western Hemisphere, thereby making it possible for you to obtain the recognized advantages of *"Automatic" Sprinkler* fire protection, *an important investment today . . . perhaps welcomed protection tomorrow.*

"Automatic" Sprinkler
FIRST IN FIRE PROTECTION
DEVELOPMENT · ENGINEERING MANUFACTURE · INSTALLATION
"AUTOMATIC" SPRINKLER CORPORATION OF AMERICA
YOUNGSTOWN 1, OHIO
OFFICES IN PRINCIPAL CITIES OF NORTH and SOUTH AMERICA

Maintenance practices below are followed in most well-kept industrial plants

●

1. Foundations. Settlement of buildings causes cracks in foundation walls. Shrinkage of concrete also produces cracks in certain instances. These cracks may admit water from surrounding soil. Large cracks can result in erosion of backfill. In any event, foundation walls should be inspected and repaired. Application of a waterproofing compound to interior surfaces will often stop small leaks. Where cracks are severe, it may be necessary to dig away backfill, caulk cracks from the outside, coat with a suitable bituminous compound, apply a membrane covering, and reswab with compound. When settling is severe, a survey should be made to determine the most appropriate procedure to use.

2. Floors. Start with joists. Inspect joists for signs of rot and strain. Next inspect the flooring. If replacement is necessary, a study should be made to find the best type of floor for the purpose. If replacement isn't necessary, the method of repair depends upon the flooring in place.

To tighten loose or creaking wood strip flooring, drill through it at troublesome spots at an angle. Drive long, headless nails and set with a punch. The floor should be properly weighted before this is done. In some cases it may be necessary to draw flooring down with wood- or lag-screws inserted through the subfloor from below.

Holes no longer in use can be filled with tapered wood plugs. Badly worn or loose wood block should be removed and reset or replaced, with appropriate anchoring material.

Concrete floors must be patched skillfully. The minimum thickness of concrete surfacing that can be placed without danger of cracking is about 2¼ inches with reinforcing mesh. New concrete will have to be carefully bonded to the original slab. To bond the patch, first remove oil film from the original surface, rough the surface thoroughly, and wet it down before starting to place new concrete.

There are numerous floor patching preparations on the market which are reported to be most satisfactory. Steel plates can be set in aisles and other places showing signs of heavy wear.

Asphalt and rubber tile, com-

NEW! A *FINER* COOLER FOR *COCA-COLA TO SERVE *COLDER* COKE AUTOMATICALLY

- **AMAZING "COLD BLAST" COOLING!** Besides normal cooling, each bottle gets an extra blast of refrigerated air! This added cold brings out the true goodness of America's favorite drink.
- **MAKES CHANGE** for dimes, quarters automatically. No cashier or attendant needed.
- **AUTOMATICALLY SERVES** frosty cold bottles of refreshing Coca-Cola.
- **BIG 240-BOTTLE CAPACITY** in only 33½ x 29½ inches of floor space.
- **5-YEAR GUARANTEE** on the Hermetically-Sealed Refrigerating System.

*"Coca-Cola" and its abbreviation "Coke" are the registered trade-marks which distinguish the product of The Coca-Cola Company.

TO YOU MILLIONS OF COCA-COLA DRINKERS . . . Buy America's leading drink from America's finest Cooler. You'll find a colder Coke is more refreshing, more appetizing!

TO YOU MILLIONS OF COCA-COLA DEALERS . . . Sell America's leading drink from America's finest Cooler. You'll find Coke sells faster, makes you more money!

SEE YOUR

AND SELECT THE WESTINGHOUSE COOLER YOU NEED

WESTINGHOUSE ELECTRIC CORPORATION • • • • LARGEST PRODUCER OF COOLERS FOR COCA-COLA

It's so easy to forget about AFTER-SERVICE —until, all-of-a-sudden you NEED it.

Buying an industrial door without the assurance of fast and efficient after-service is like buying "half-a-door." The package isn't complete without the service.

Crawford Marvel-Lift Doors probably need less service than any other door you can buy—yet, the nation-wide Crawford organization specializes in servicing industrial doors (of all kinds) and gladly works nights and week-ends in emergencies.

That's because we look at the door business realistically. We know that any moving device is going to need adjustment and replacement parts eventually. We know that when damage knocks a door out of commission it can tie up a whole department or an entire plant. And so, we know that every door we sell *must* be backed by good, fast service.

If you bought "half-a-door" and are having trouble, call your local Crawford Door Sales Company, listed in the Yellow Pages. And, next time you're buying new doors, power operators or remote controls, call Crawford Door Sales Company for free estimates. You'll like getting the complete package—product, installation, service—from an organization of specialists.

A typical Crawford Marvel-Lift Door installation. Write for literature describing the complete line.

Crawford Door Co.

418 St. Jean • Detroit 14, Michigan

monly used in offices, lobbies, and lounges, can be replaced individually with the aid of a bonding compound. Rolling the patch with a heavy roll is advisable.

Where acid conditions exist, floors can be protected with acid-resistant paint. Or vitreous tile set in mastic cement can be used. It is important to protect floors against acid as soon as possible. Floors having steel reinforcing can be weakened structurally if unprotected for too long.

3. Side Walls. Inspect side walls from groundline to coping. Cracks are the biggest problem in concrete walls. There are two types of cracks: (a) those caused by expansion, contraction, vibration, or settlement; (b) those caused by shrinkage. Treatment is not necessarily the same for both types. Repair the former kind by cutting out the crack to broaden its surface. Caulk with a suitable compound. Shrinkage cracks should be cleaned and filled with a cement-mortar mixture.

It is important to fill all cracks, no matter how small. In cold weather, freezing may cause heaving or enlargement of existing cracks.

Brick walls need periodic inspection and should be pointed when necessary. This applies to glass block and cinder or cement block as well. Brick walls can be waterproofed by a number of methods. One is to impregnate a pre-warmed wall with paraffin. Liquid paraffin is brushed on and the excess is wiped off. There are some transparent sealing compounds now on the market which, it is claimed, effectively seal a wall without changing texture or color.

4. Platforms. Hard wear is the fate of many a loading and shipping platform. Indeed, the term abuse may be a better one. Interior platforms are generally of concrete and the method of repair prescribed for concrete floors can be applied to damaged platform surfaces. In truck docks where platform edges are unprotected, wheels of materials handling equipment can cause chipping. It is sometimes advisable to install metal edging for protection.

Wooden platforms should be checked for loose planking, broken columns, weakened supports, rotting, and sagging and leaking roofs. Lack of timely repair may result in employee injuries.

5. Canopies · Inspect the anchorage. If supports are weakened, the weight of the canopy may cause it to pull away from the wall. Check

It's Stainless Steel!

The New Sensational Fire Extinguisher

1/3 LIGHTER

PERMANENT FINISH

- **Stronger—by more than half. Each Buffalo Stainless Steel Extinguisher tested to 500 lbs. (Ordinary types tested to only 350 lbs.)**
- **Nearly 7 lbs. lighter—light enough that a woman easily can operate it.**
- **The permanent finish as found only in Stainless Steel.**
- **Available in both Soda-Acid and Foam types.**

Ask your Buffalo representative to demonstrate all of the advantages of this handsome new Buffalo *better-built* Fire Extinguisher that stays gleaming bright. If he isn't listed in the classified section of your phone book, please write us today. You'll want all the facts as quickly as possible.

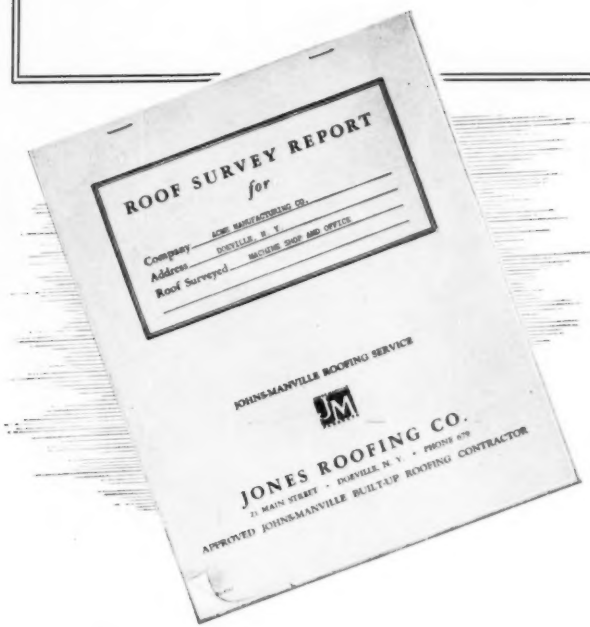
BUFFALO FIRE APPLIANCE
CORPORATION
DAYTON 1, OHIO
Established 1895

BUFFALO better-built

Available both in Soda-Acid and Foam types

This free Survey of Your Roof

enables you to plan ahead, avoid unforeseen maintenance expense



Plant engineers and maintenance men say:

"It provides an accurate record of our roofs"

"It helps us plan our maintenance budget"

"Forestalls unforeseen expenses"

Take advantage of this *free* Johns-Manville service to find out the exact condition of your roof. It will enable you to make plans *now* for repairs and maintenance in the future.

That's what plant engineers and maintenance executives *like* about the J-M Roof Survey Plan.

Don't take *your* roof for granted, even though it doesn't *seem* to be leaking. Many a roof with torn flashings, dried-out felts, even rotted decks has been *assumed* to be in "good condition."

The Roof Survey Report will cover all the critical areas of your roof . . . flashings, deck, roofing felts, parapet walls, skylights, etc. It will be an accurate picture by a roofing *expert*—the J-M Approved Built-Up Roofing Contractor. And it will cost you only the trouble of *asking* for it.

Let us send you the interesting booklet, "Things You Should Know About Your Roof." It gives complete information about the *free* J-M Roof Survey Plan, together with the full story of the Johns-Manville Flexstone* Asbestos Roof. Write Johns-Manville, Box 290, New York 16, N. Y.

*Reg. U. S. Pat. Off.

Made of ASBESTOS

Johns-Manville *FLEXSTONE Built-Up Roofs**

CORRUGATED TRANSITE* • ACOUSTICAL CEILINGS

DECORATIVE FLOORS • *TRANSITE WALLS • ETC.

supports for soundness, especially at their bases; corrosion of metal parts or rotting of wood members may be taking place. Make sure that adequate drainage exists.

6. Structural Members · Concrete, steel, and wood are the materials commonly used for structural members. These members form the plant's skeleton. Close attention should be paid to their condition, particularly where joints occur. Rivets and welds may have loosened or cracked from one cause or another. Corrosion resistant compounds can be applied where necessary. Overloading should be guarded against. Often a survey of loads and limits reveals that strengthening is required. In some cases the limits have been exceeded by addition of heavy equipment. In other cases, deterioration of members is cause for strengthening.

7. Interior Surfaces · Common signs of deterioration in walls are cracks, holes, looseness, broken and missing brick, spalled areas, and damaged doorways.

Ceilings may need cleaning or painting. Acoustic tile may have come loose. Suspended ceilings occasionally sag.

Column defects vary with material. Look for cracks, rust, sagging, loose bricks, rot, loose rivets and bolts, and bent flanges.

Windows constitute the major portion of wall surfaces in many of today's plants. Broad expanses of glass in standardized sash permit plants to carry reasonable stocks of replacement glass in a few regular sizes. Plastic glazing compounds made especially for use on metal sash are available. These may be had in a variety of factory-mixed colors and many can be applied by pressure gun as well as by hand. Such compounds are easier to remove than hardened putty and remain flexible season after season.

Window frames should be inspected for leaks and rust. Sash corrosion often begins at leaky joints. A good scraping followed by careful application of rust-inhibiting paint is recommended in early stages of deterioration. It can prevent costly replacement later.

Door faults include loose hinges, damaged latches, broken glass, sagging and swelling, missing counterweights, damaged or missing fuse links, and defective operating mechanisms—all, of course, depending upon the kind of door.

Common door frame defects are leakage, rust, and rotting. Frames

Reduce your

maintenance worries... Use

PENTA-TREATED wood

Men who handle maintenance budgets appreciate the positive protection PENTAchlorophenol gives against termites and wood decay.

This scientific treatment means longer life for wood . . . cuts upkeep and replacement costs . . . gives wood greater salvage value.

Widely used in home, farm and industrial construction, PENTAchlorophenol is rapidly expanding the already great usefulness of wood as an economical building material. "PENTA"-treated lumber is clean and easy to handle—paintable, too, when the proper solvent is used.

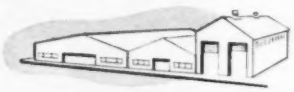
Safeguard your wood construction—and your budget—specify "PENTA"-treated lumber. For further information, write Dow, Dept. PE 28.

THE DOW CHEMICAL COMPANY
MIDLAND, MICHIGAN

DOW
penta-
chlorophenol

Original

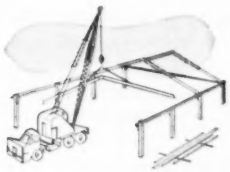
Original in every sense of the word are McCloskey custom-made industrial buildings. For this *original* rigid frame design was the *first* improvement in the basic structure of steel buildings ever made in this country. It is an improvement of *primary* importance to you as it makes possible a better building at less cost.

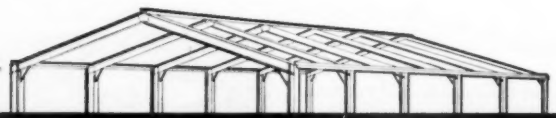


The McCloskey patented Rigidsteel design employs a rigid frame—has no overhead trusses. This gives you *extra* headroom for conveyor systems, equipment and storage space without additional height at the eaves. You have less waste space to heat—less cover to install and maintain. You also get broad aisles, long spans without interior columns.

As specialists in single story buildings McCloskey engineers give you complete construction service. We furnish all plans and materials, supervise construction and quickly turn over to you a completed building custom-made to suit your operations. All this can be done weeks ahead of ordinary construction.

McCloskey Company has built more rigid frame industrial buildings than any other company in the country. They have been planned and erected to suit a wide variety of manufacturers—most of them the leaders in their field. If you are planning a new building why not find out how McCloskey Company can save you time and money. Write or wire us today.





McCLOSKEY COMPANY
OF PITTSBURGH

McCLOSKEY CONSTRUCTION COMPANY
3409 LIBERTY AVENUE • PITTSBURGH 1, PA.

may be bumped or bruised by careless use of materials handling equipment. Appropriate measures should be taken to repair and refinish promptly.

Stairways should be clean and well-lighted at all times. Treads and risers must be tight. Treads should be repaired or replaced if worn or slippery. Railings work loose in time and tightening or additional supports may be necessary.

8. Interior Equipment • Refer back to this heading in the check list. It covers a wide range of equipment. No satisfactory substitute will be found for periodic inspection of all items. Careful attention should be paid to maintenance instructions offered by manufacturers for their equipment. When trouble is serious, time and expense can often be saved by calling in the manufacturer's service representative for advice.

Among the points to watch in lighting equipment are dirt, burned-out bulbs and tubes, defective switches and ballasts, loose connections, bad fuses, defective circuit breakers, overloaded circuits, faulty insulation, and worn portable cords.

Piping and plumbing defects include leaks, rust, faulty expansion joints, loose or broken hangers, poor covering, lack of paint, improper slope, cracked fittings, and mechanical injuries. Normal wear can cause many of these troubles. They should be attended to as soon as possible.

Radiators can be checked for dirt, leaks, improper slope and position, and malfunctioning valves.

Spinkler unit inspection should cover condition of fusible link, location, mechanical damage, obstructions, and corrosion.

In valves, common faults are leaks, dirt, missing parts, and cracked bodies. Traps benefit from frequent cleaning and repair of leaks, cracks, stoppages, and seats.

Unit heaters present problems, too: Defective motors, improper support, wrong location, leaks, dirt, and bent fins are among them.

9. Roofs • To get the most out of your roof, inspect and repair with regularity. Examine every foot of the roof to find openings, nail holes, bulges, and blisters. Look for separation of seams, drying out of paper covering, cracks, and other signs of deterioration. Remove all trash. Trouble often occurs at flashing

Is your building "fireproof" like this?

YOUR BUILDING may be termed "fireproof" if it is constructed of brick, concrete and steel. Yet, filled with furniture, packing cases, oil and other flammable materials, it may become a gigantic "firebox", as the one illustrated above. Building and contents both may be gutted, even completely destroyed.

There is one sure way to protect your building and its contents against fire . . . a Grinnell Automatic Sprinkler System—the only type of protection that will control fire quickly, effectively, automatically, at the source, whenever and wherever it may happen to strike.

If your property is now unprotected against fire, you are already paying through insurance for Grinnell Protection—*why not have it?* Call in a Grinnell engineer now. Grinnell Company, Inc., Providence, R. I. Branches in principal cities.

99 YEARS PIPING

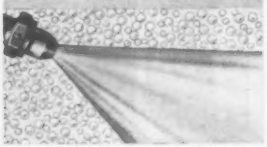
GRINNELL

Fire Protection Systems

FOR ORDINARY RISKS

GRINNELL AUTOMATIC SPRINKLER SYSTEMS protect over 70 billion dollars worth of property. Wet-Pipe Systems where temperatures remain above freezing; Dry-Pipe Systems where temperatures go below freezing.

FOR OIL FIRES



GRINNELL MULSIFYRE SYSTEM extinguishes fires in heavy and medium oils and flammable liquids, by converting the burning liquid into an emulsion incapable of burning.

FOR SAFEGUARDING TANKS OF EXPLOSIVE MIXTURES

GRINNELL PROTECTOSPRAY SYSTEM (by insulation and cooling) protects tanks, structures and equipment against serious distortion and buckling, even when exposed to the fiercest flames from volatile liquid fires.

FOR MANUAL FIRE-FIGHTING

GRINNELL FLAMEBUSTER is a three-purpose portable hose nozzle, giving low and high velocity emulsion-forming sprays, and also a solid stream.

OTHER SYSTEMS FOR SPECIAL CONDITIONS AND HAZARDS

AUTOMATIC FIRE PROTECTION SYSTEMS

OUT OUR WAY

OUR PRODUCT GLOWS IN THE DARK! IT'S SENSATIONAL!
YOU GUYS ARE WASTIN' YOUR TIME! I USE SOL-SPEEDI-DRI BECAUSE IT COVERS MORE, ABSORBS MORE, COSTS LESS TO USE!
THE PRODUCT I SELL CRACKLES AND POPS--KEEPS EVERYBODY ON THE JOB WIDE AWAKE!
"GLOWS IN THE DARK--CRACKLES AND POPS!" THEY'VE GOT TO HAVE SOMETHING TO SAY--'CAUSE THEY CAN'T MATCH THE NEW IMPROVED SOL-SPEEDI-DRI!
YEH, CLAIMS NEVER DID DO SO GOOD AGAINST FACTS! AND THE OL' MAN'S GOT THE FACTS ABOUT SOL-SPEEDI-DRI!
HIGH PRESSURE
J.R.WILLIAMS

You Can't Beat the Facts!

New improved *SOL-SPEEDI-DRI* gives you *more volume* per pound.

New improved *SOL-SPEEDI-DRI* *covers more* floor area per pound.

New improved *SOL-SPEEDI-DRI* *absorbs more* liquids per pound.

YES, the new improved Sol-Speedi-Dri is more economical to use, because you get more bulk, more coverage, more absorption per pound.

★

Safety & Maintenance Co., Inc., 1 Wall Street, New York 5, N.Y.

Warehouse stocks maintained in principal cities of the United States and Canada.

MAINTENANCE TIPS *(continued)*

joints, flashings develop pinholes, and corrode. Ducts, gutters, downspouts, and other water conductors should not be overlooked. Make an examination of all retaining straps and other holding devices.

The areas around roof structures are frequent sources of trouble and require careful examination for defects.

When a roof has been thoroughly inspected and deficiencies noted, repair should be started as soon as possible. Where roofing is covered with slag or cinders, they should be removed. Patching should be done, wiping or swabbing with compound follows, and replacement of cinders is the last step. Again, it pays to handle repair of flashings carefully. Roof leaks are often hard to find. A pinhole will admit water which follows decking to a low spot before it becomes apparent from below. Bubbles and blisters are best treated by first slitting and smoothing, and then patching.

It is considered good policy to reinspect after the renovation has been completed. When traffic on a roof is necessary, it is advisable to provide a catwalk. Small stones and sharp objects will often puncture a roof unless it is so protected.

10. Roof - Mounted Structures - Penthouses, being, in effect, small buildings atop larger ones, have many elements that require examination. Inspect the roof. It may need repair or replacement. Flashings may have defective furring strips, loose counter flashing, or faults in flashing felt. Counterflashing should be painted and felt can be recoated or replaced. Corrosion or rotting of structural members may be taking place. Strengthening, replacement, or painting is called for here. Walls are improved by pointing, filling cracks, and by painting. Check copings for loose or missing tile or stone. Point and waterproof wherever required.

Windows may need reglazing, reputtying, frame caulking, or painting. Look for corrosion or dry rot in doors. Proper fit and good condition of hinges and locks should be assured. Stairs and railings can be dangerous when in need of repair. Appropriate measures should be taken as soon as possible to protect personnel from injury.

Skylights suffer about the same defects as sash in sidewalls. The operating mechanism, however, is

Sure Cure for gas or liquid leaks

No. 304-N Sylphon Packless Valve comes in sizes from ½" to 2" for pressures up to 150 lbs. Also available in larger sizes is No. 1304 with flanged connections for liquid pressures up to 80 lbs. No. 304-NV is ideal for vacuum service.

SYLPHON packless valves

● Even tiniest leaks of valuable liquids or gases are *stopped*—with Fulton Sylphon Packless Valves. Installed on pipe lines carrying oil, gasoline, or other volatile liquids or vapors, these valves prevent waste—provide vacuum protection. They guard you and your equipment against costly losses, explosion, fire, and other damage.

The valve has a dual-ply, seamless Sylphon metal bellows instead of the customary packing—eliminating leakage that can seep past the stuffing box of an ordinary packed type valve. The bellows provides a positive seal—is metal-housed for protection against erosion. Available in many sizes and types with body made of brass, bronze, cast iron, cast steel, stainless steel or monel.

Widely used in chemical plants, oil refineries, power plants, aboard ships—or wherever steam, air, gases or liquids are handled. For complete information, please write for Bulletin GF-813.

FS

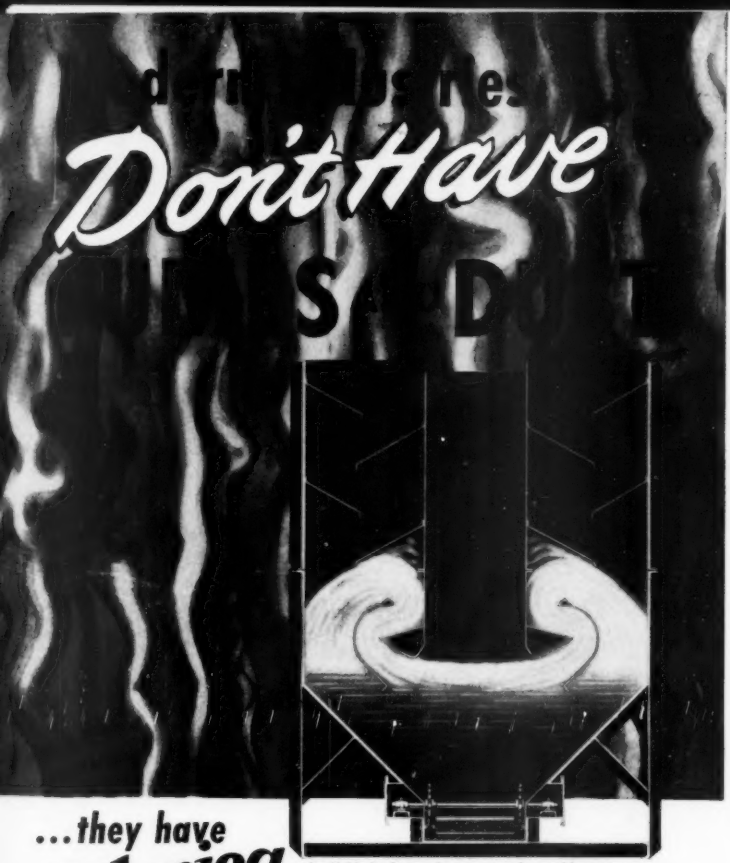
FIRST WITH BELLOWS

Temperature Controls • Bellows Devices • Bellows Assemblies

FULTON SYLPHON
DIVISION

ROBERTSHAW-FULTON CONTROLS CO., KNOXVILLE 4, TENN.

Canadian Representatives, Darling Brothers, Montreal



Available both as a floor-mounted type (shown) or an overhead installation. Complete with a motor-driven sludge removal conveyor, where required.

Operators of modern plants have long since learned the economy of ridding their shops of destructive dust and smoke fumes. Men who work in plants free of these health hazards feel better, work better, produce more. And the accident rate is lowered. In actual plant operation, the Schmieg CENTRI-MERGE method of dust and fume elimination has shown marked advantages over any other system. Dust and fumes are collected *immediately they occur*—shot back on a stream of air through ducts to the Collection Unit. In the washing chamber of this unit—a veritable tornado of seething, churning water-dust is washed and scrubbed from the air and flooded into the sludge tank below, permanently trapped under water. Fumes go out the exhaust. AUTOMATIC operation from start to finish.

If you are interested in learning why the CENTRI-MERGE method is so highly endorsed by plant owners and how its application can so greatly benefit your own operation, our engineers are prepared to give you some eye-opening information on dust and fume elimination—without obligation, of course.

THE *best* AIR PURGE is CENTRI MERGE

Schmieg INDUSTRIES INC.
Engineers & Manufacturers

209 PIQUETTE AVENUE • DETROIT 2, MICHIGAN

MAINTENANCE TIPS *(continued)*

in most cases more complex. Inoperative or damaged mechanism should be repaired and repainted.

Stacks suffer a good deal of abuse from the elements. Look for corrosion, inside and out. Check condition of supports, guys, or braces. They should be repainted at regular intervals.

Cyclones, ventilators, and signs should not be overlooked. Points to consider on water tanks include condition of heating system, risers and housing, airplane warning lights, ladder, walk, and railing.

11. Yard Equipment and Structures • Pavements and driveways are subject to heaving. Small cracks can be tarred; small holes patched. Expansion joints should be checked and filled annually. Surface repairs are important and should not be neglected.

Trees benefit from periodic pruning to remove dead timber and to reduce top-weight. Lawns may need renovating or patching. Grounds require year-around care.

Small buildings are the counterpart of large plant buildings: Inspect and follow the same general repair procedures.

Check walks and railings to determine condition. Repair if necessary. Hydrants should be opened, inspected, operated, cleaned, oiled, closed, and painted. All fire escapes, tanks, tank supports, fences, and the like, must periodically be given a coat of suitable paint. If rust spots appear, or acid conditions exist around structural framework, it should be wire-brushed and painted at once, to protect the metal until regular painting can be done.

Tunnels can be treated as foundation walls to protect against entry of moisture. Where leakage is severe, it may be necessary to use a sump pump.

Railroad tracks need inspection for loose spikes and rail joints, rotted ties, condition of switches and rails, and faulty ballast.

Crane-supporting structures are subject to corrosion. Foundations, anchor bolts, ladders, railings, walkways, and alignment need inspection. The same inspection should be made of conveyors.

In addition to painting, platform scales require inspection for condition of walls and floor of pit, corrosion of steel work, and need for repairs or replacement.

Recreation sites need regular attention and care.

To everyone about to order unit heaters, Modine says,

"Look before you buy!"

Design and Mechanical Patents Pending

MODINE MAKES THIS SPECIAL OFFER!

When you buy from sight, you buy right. That's why it will pay you to call your Modine Representative. He'll bring an actual Modine Unit Heater to your office. Check its attractive appearance, its sound engineering, its rugged construction. And when you do — you'll see why Modine leads the unit heater field.

Look at Modine Copper Coils

Find out how all-copper construction of Modine coils resists corrosion due to electrolysis. It means savings in your pocket from reduced maintenance expense.

Look at Modine Velocity Generator

See how this exclusive Modine feature gives you increased heat-throw without raising motor power requirements. Yes — with Modine you get better heating at no increase in cost.

YES, look before you buy.. and you'll buy Modine!

Look . . . examine . . . compare. Get the facts about all unit heaters and your best judgment will tell you—"Buy Modine!" Here's why. Only Modine gives you ALL these important features: Modern Beauty . . . All-Copper Coils . . . Peak Performance . . . Easy Installation . . . Smooth Operation. What's more you can choose from Modine's complete line of 3 types and 47 capacities to meet your specific heat, air delivery, height and location requirements.

See why Modine is years ahead in unit heater engineering. Call your Modine Representative for all the facts. He's listed in the "Where-to-Buy-It" section of your phone book. Or write direct. Modine Mfg. Co., 1505 Dekoven Ave., Racine, Wis.

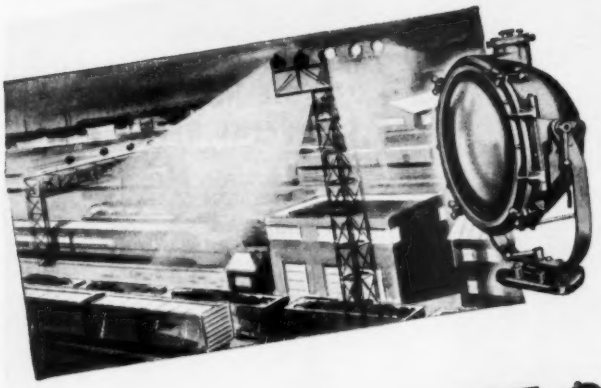
Send for the Modine Unit Heater Catalog Today!

U-1003-ar

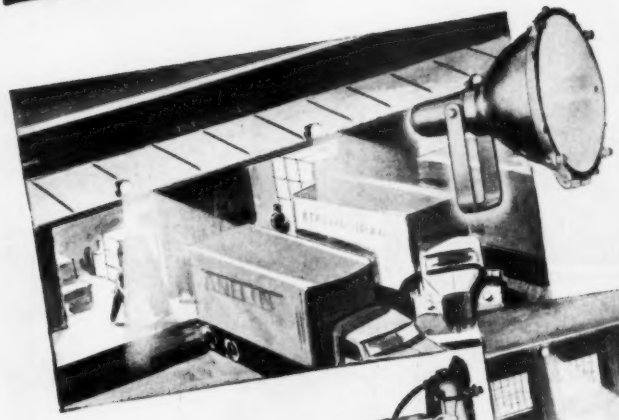
Modine UNIT HEATERS

YOU CAN BE **SURE**.. IF IT'S

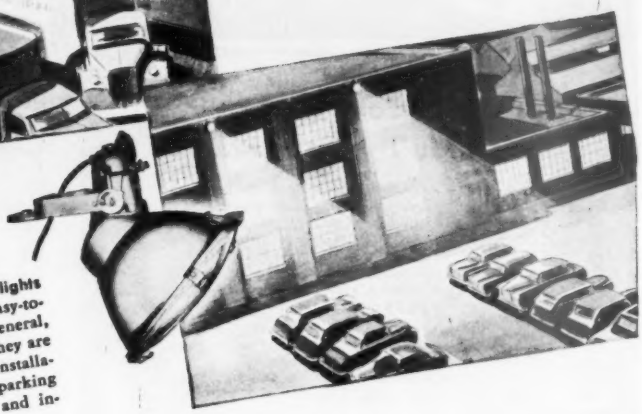
Westinghouse



Heavy-Duty Floodlight, Type CAK-20 is designed to provide maximum light output at long range required for floodlighting railroad yards, industrial and construction projects and protective plant lighting. Mounting conforms to A.R.E.E. standards for Railroad use.



General-Purpose Floodlights, Type AH-14 are economical, all-weather, hinged, covered units. Light but sturdy, they provide pin-point floodlighting for loading docks, service stations, industrial sites and industrial play areas.



Type VRC-18, Ground Area Floodlights are durable, weatherproof, easy-to-maintain units designed for general, high level, area illumination. They are suited for a wide variety of installations, such as: service stations, parking lots, sports parks, driveways and industrial areas.

MAKES A WORKING DAY

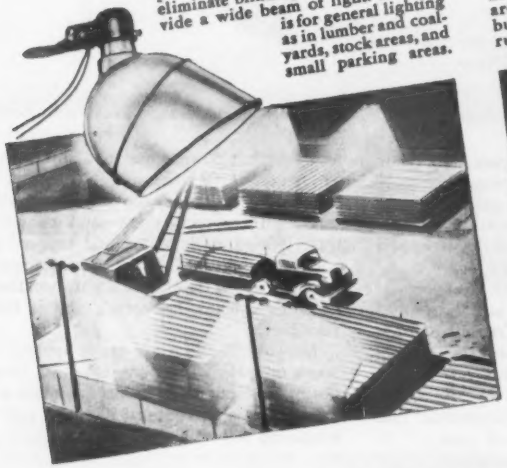
OF EVERY NIGHT

Floodlighting can make any daytime operation equally practical at night. Whatever it is, the amount of light supplied outdoors should be about the same as for comparable indoor operations. Therefore, the floodlighting units must be carefully selected to provide the desired light distribution.

Westinghouse floodlights for industrial applications are designed for the specific job . . . whether you are interested in plant protection, plant appearance or increased production.

A Westinghouse Lighting Sales Engineer will gladly co-operate with you, your local power company or electrical contractor in planning your floodlighting installation. Call your local Westinghouse Distributor today. J-04210

Ground Area Floodlights, Types AF-16 and AFA-16 are open-type, visor-protected floodlights designed to eliminate blinding glare . . . yet provide a wide beam of light. Best use is for general lighting as in lumber and coal-yards, stock areas, and small parking areas.



Type CAK-14, Heavy-Duty Floodlights are suited for jobs where rough treatment and severe weather are routine. This weatherproof unit is ideal for high-intensity, reliable floodlighting of industrial loading areas—construction projects—buildings — mines — and other rugged industrial applications.

Westinghouse

PLANNED LIGHTING PAYS

19 YEARS OF "SALTY" SERVICE...

SALT and weather are a punishing combination for steel and protective coatings. Ask any maintenance engineer. He'll tell you that recoating every six months or a year is the rule rather than the exception —that maintenance costs are sky high.

But not at the Leslie Salt Company of Newark, California. This salt crane was protected with a Koppers Coating in 1929. Except for a slight touch-up due to mechanical damage, there was no maintenance coating expense in 19 years! That's why a Koppers Coating—Bitumastic* No. 50—was again specified last year . . . to give this *old* crane *new* protection.

Koppers makes a complete line of Industrial Protective Coatings. There's a Koppers Coating to save you money . . . to keep shut-down time to a minimum. For example, Bitumastic* No. 50 is a heavy-duty coating made for heavy-duty service. It protects metal and concrete underground, underwater, and exposed to corrosive industrial fumes. Then, there's Bituplastic. It resists sunlight, weather, doesn't "alligator" or crack and is fire-retardant.

Koppers Coatings are easily applied by brush or spray. They give effective, long-lasting protection . . . reduce maintenance expense to a minimum. Koppers representatives will be glad to consult with you on your corrosion problems. Send for copy of the new Protective Coatings Catalog.

KOPPERS COMPANY, INC.
DEPT. FM-4 PITTSBURGH 19, PA.

*T.M. Reg. U.S. Pat. Off.

KOPPERS

PROTECTIVE COATINGS

Koppers Industrial Coatings are sold through Industrial Distributors

WE ARE DOING ALL WE CAN TO SUPPLY YOU WITH PIPE

● Your Spang CW Distributor is doing his best to divide his supply of pipe fairly and to serve you well. And we're doing all we can to produce greater quantities of this dependable pipe. We have recently replaced existing equipment with a new, high speed pipe mill for manufacturing ½" to 1¼" sizes. But even with this new mill we have not been able to meet the tremendous demand for Spang CW.

When you need pipe, fixtures, fittings, valves or any other material, contact your Spang Distributor first. You'll find that he's a dependable source of supply, and always willing to help you in any way he can.

SPANG-CHALFANT

Division of The National Supply Company

EXECUTIVE OFFICES: PITTSBURGH, PA.

District Sales Offices: Atlanta; Boston; Chicago; Detroit; Houston; Los Angeles; New York; Philadelphia; Pittsburgh; St. Louis; San Francisco; Tulsa

SPANG CW

QUALITY *that is recognized wherever pipe is used*

Humphrey

GAS UNIT HEATER

A complete heating plant in itself, using no steam or water, the Humphrey Gas Unit Heater is ideal for heating factories, warehouses, shops. Provides forced circulated heat at little cost.

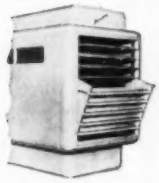
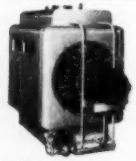


Illustration at left shows unit heater with louvers adjusted to direct the heated air downward. Heat is supplied right where needed and in the correct amounts.

Positive circulation of the heated air is assured by the rugged fan assembly. Operation is completely automatic.



HUMPHREY

...the standard of comparison!

New "Beauty-Line" styling; new streamlined heat exchangers; new super combustion burners; new positive safety controls — these and many other exclusive features make Humphrey Gas Unit Heaters outstanding values.

Write today for complete literature illustrating and describing these fine heaters.

GENERAL GAS LIGHT CO.
KALAMAZOO, MICHIGAN

FACTORY'S CATALOG SERVICE

FACTORY, through the cooperation of leading manufacturers, makes it possible for you to secure catalogs, bulletins, and booklets listed here without cost or obligation. Check and fill out the coupon below and send it to FACTORY

1

ACOUSTICAL MATERIALS—metal, asbestos-cement, fiberboard types. Construction details, photographs, installation methods; description, data charts. Johns-Manville.

2

AIR COMPRESSORS—Series 100, Class WN-112. Design, different types, applications; construction details, exploded views, component parts. Joy Mfg. Co.

3

AIR COMPRESSORS, SPRAY EQUIPMENT—General Cat. 262, 2 sections. How to select air compressor, ranges, different types. Spray guns, accessories, equipment; ovens. American Brake Shoe Co., Kellogg Div.

4

AIR CONDITIONING—**4(a)** General information on control of the effect of humidity on temperature, hygroscopic and non-hygroscopic materials, on physiological, chemical, and biological reactions. Photographs of air conditioning, refrigeration equipment. 36 pp. **4 (b)** Bul. AC 248, 12 pp.; air conditioning, refrigeration, and industrial heating equipment. Photographs, physical data. Carrier Corp.

5

AIR CONDITIONING—"Ventilation for the Nation," Cat. 544, 50 pp. Fans, shutters, ventilators, blowers, unit heaters, cooling units. Photographs, diagrams, dimensions, specifications. Ilg Electric Ventilating Co.

6

AIR CONDITIONING CABINETS—Type VPC, Model F. Design features; tables of air resistance, speed, horsepower, other physical data. Dimensional diagram. Buffalo Forge Co.

7

ALUMINUM—"Alcoa Aluminum in Architecture," 40 pp. Alloys, fabrication, finishes, products. Cross-section drawings, photographs, diagrams. Aluminum Co. of America.

8

ANCHORS, FRAMING—for wood construction, called Trip-L-Grip. Dif-

MAILING COUPON—GOOD UNTIL MAY 31, 1949, ONLY

FACTORY MANAGEMENT & MAINTENANCE (April, 1949)
330 West 42nd Street, New York 18

Please have manufacturers send me, without obligation, literature below:

1	2	3	4a	4b	5	6	7	8	9	10	11	12
13	14a	14b	15	16	17	18a	18b	18c	19a	19b	20	21
22a	22b	23	24	25	26	27	28	29	30	31	32	33
34	35	36	37	38	39	40	41	42	43	44	45	46
47	48	49	50	51	52	53	54	55	56	57	58a	58b
59	60	61	62	63	64	65	66a	66b	67	68	69	70
71a	71b	72	73	74	75	76	77a	77b	78	79	80	81
82	83	84	85	86	87	88	89	90	91	92	93	94
95	96	97a	97b	98	99	100	101	102	103	104	105a	105b
106	107	108	109	110	111	112	113a	113b	114	115	116	117
118a	118b	119a	119b	120	121	122	123	124a	124b	125	126	127
128	129	130	131a	131b	131c	132	133	134	135	136	137	138
139	140a	140b	141	142	143	144	145	146	147	148	149	150
151	152	153	154	155	156	157a	157b	157c	157d	158	159a	159b
160	161	162	163	164	165	166	167	168	169	170	171	172
173	174	175	176	177	178a	178b	178c	179	180	181	182a	182b
182c	183											

Name.....Title.....

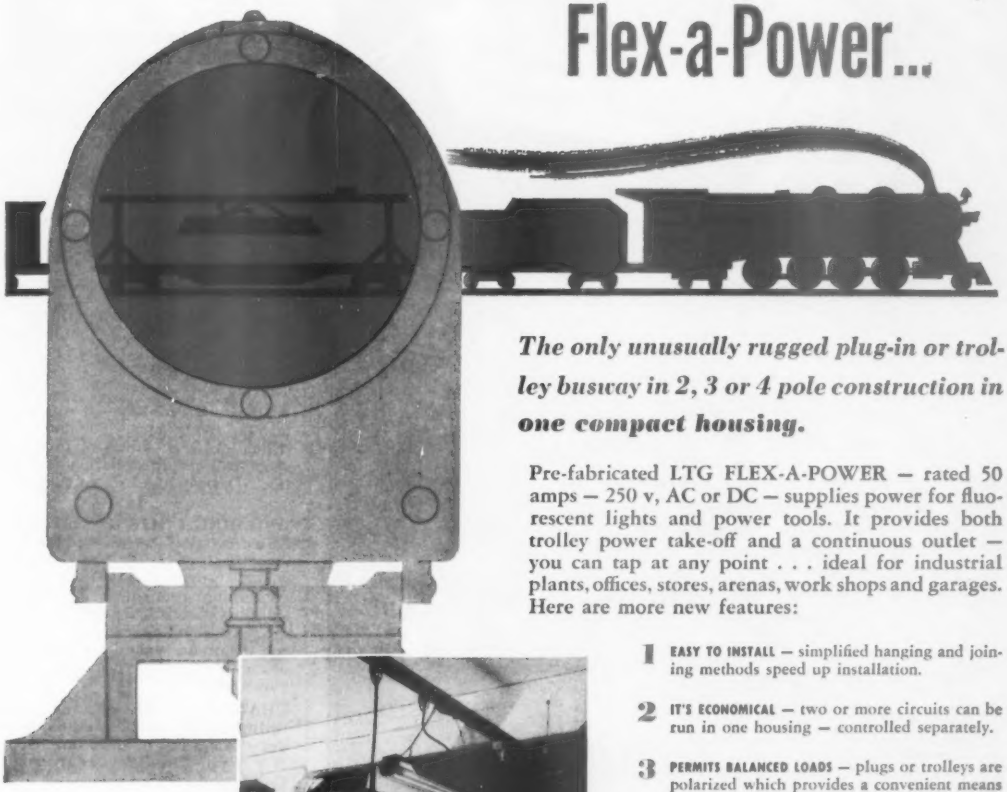
Company.....

Street Address.....

City.....State.....

Please fill out this coupon completely in order to avoid delay in handling. Numbers correspond to description paragraph numbers. Where separate catalogs are described in one announcement, please specify exactly which are desired.

You get 6 big advantages with New LTG Flex-a-Power...



The only unusually rugged plug-in or trolley busway in 2, 3 or 4 pole construction in one compact housing.

Pre-fabricated LTG FLEX-A-POWER — rated 50 amps — 250 v, AC or DC — supplies power for fluorescent lights and power tools. It provides both trolley power take-off and a continuous outlet — you can tap at any point . . . ideal for industrial plants, offices, stores, arenas, work shops and garages. Here are more new features:

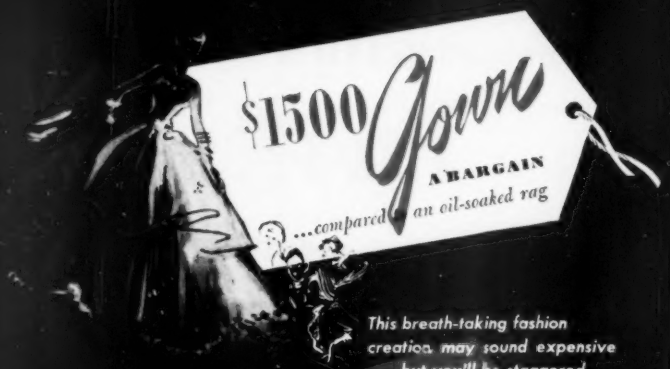
1. **EASY TO INSTALL** — simplified hanging and joining methods speed up installation.
2. **IT'S ECONOMICAL** — two or more circuits can be run in one housing — controlled separately.
3. **PERMITS BALANCED LOADS** — plugs or trolleys are polarized which provides a convenient means of balancing loads.
4. **IT'S REALLY RUGGED** — rigid construction of housing itself prevents sagging — only 2 hangers needed for each 10 ft. section.
5. **MORE FLEXIBILITY** — standard fittings such as elbows and radius sections permit economical custom installations — easy to disassemble and relocate.
6. **GREATER CONVENIENCE** — trolley with silver alloy contacts may be inserted or removed at any point along the run — no "drop-out" section required.

FOR MORE INFORMATION, write for circular TFC-3, THE TRUMBULL ELECTRIC MANUFACTURING COMPANY, Plainville, Conn.

Men Who Observe the Best Electrical Practice Make It a Practice to Use

TRUMBULL (T) ELECTRIC

TRUMBULL'S TRAINLOAD OF NEW PRODUCTS



This breath-taking fashion creation may sound expensive . . . but you'll be staggered by the possible cost of a dirty waste rag!

The most expensive piece of cloth you ever pay for may be that oil-soaked rag thoughtlessly tossed in a corner.

The devastating fury of fire—caused by spontaneous combustion of waste materials—can snuff out your business life over night.

Safeguard your property... the Protectoseal System stops fires before they start. Investigate Protectoseal scientific fire prevention. Saves you money—saves your property! Protectoseal engineers will plan for your complete fire safety without charge.

The PROTECTOSEAL Company

1962 S. Western Avenue • Chicago 8, Ill.

FREE: Analyze *hidden hazards* on your property with "Self-Checking Chart" and booklet of FIRE FACTS. Write today.

ferent types, specifications, sketches of uses; chart of safe working values. Timber Engineering Co.

9

ANNUNCIATORS — supervisory. Bul. 120, 8 pp. Photographs of different types, characteristics of each. Auth Electric Co.

10

ASBESTOS, CORRUGATED—sheets for roofing, siding. Characteristics, uses, different pitches; accessories; methods of fastening. Diagrams, sketches, photographs; suggestions on estimating. Keasey & Mattison Co.

11

BENDERS—for pipe, tubing; conduit, bus-bars, hydraulic and hand units. Models, parts, accessories for various applications. Greenlee Tool Co., Div. of Greenlee Bros. & Co.

12

BUILDING BOARD—asbestos cement, called Flexboard. Characteristics, applications; photographs, sketches of joints, cutting methods. Johns-Manville.

13

BUILDING PANELS—steel and aluminum. Wall, deck, floor units; electrification data; tables of properties, specifications; installation information. Detroit Steel Products Co.

14

BUILDING UNITS of concrete slab, called Durisol.—**14(a)** Modular units, structural, insulating, fireproof, sound-absorbing. **14(b)** Roof plank, combining roof deck, thermal insulation, acoustical ceiling. Photographs, sketches, cross-section view; specifications, sound-absorption coefficients of both types. Durisol, Inc.

15

CHANNEL, STEEL—for suspended ceiling construction. Methods of use, detail diagrams of installations. Cat. N-1, 8 pp. The Sanymetal Products Co., Inc.

16

CHEMICALS, FOR WATER CONDITIONING—scale control, corrosion inhibition. Different formulas, applications and properties of each; special mixtures, formulas. Wright Chemical Corp.

17

CLEANER—for floors, called Plyokem. Description of chemical action, photographs of methods of application. The Diversey Corp.

18

CLEANSERS—18(a) Formula SC-49, for floors, walls, glass, paint. **18(b)** 3SBS soaps, for heavy-, light-, and extra-light-duty skin cleaning. **18(c)** Soap dispensers, for Formula SBS-11 Type X powdered soap. Characteristics of each product, illustrations. Sugar Beet Products Co., Chemical By-Products Div.

19

COATINGS—19(a) Non-slip, called Flintdek, for floors, stairs, locker

Your ROOF doesn't have to be Overhead!

Monel parapet flashing, siding, skylight trim and gutters. Installed on a coal-burning power plant in 1913, they are still in good condition.

These Monel gutters, base, cap and step flashings, down spout straps and eave boxes were installed on a chemical manufacturing plant, where they are successfully resisting destructive fumes, smoke and lowland dampness.

Roof upkeep doesn't have to be a constant expense. Other plants have ended this problem with Monel roofing . . . roofing that lasts the life of the building

Tired of short-lived roofs and roofing parts?

Then turn to the metal that can end your problem . . . *Monel**.

Monel is an alloy consisting of approximately ⅔ nickel and ⅓ copper. Throughout industry it is known for its resistance to corrosion and rusting . . . severe stresses . . . wear . . . buckling and cracking at extreme temperatures.

It is doing hundreds of different jobs (*tough jobs*) in many fields, in many forms.

To you it offers a chance to cut your annual outlay for roof maintenance. Just look at the record. Monel roofing installations date back to 1910. Most of them have never required a penny for subsequent repairs.

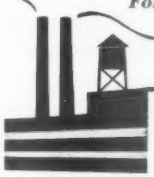
No wonder Monel roofing is called "life-of-the-building" roofing.

Investigate Monel roofing for your own plant buildings. At a practical cost, you can have an entire roof of Monel, or Monel roofing parts such as drainage systems . . . flashings . . . skylight frames . . . ventilators . . . louvers . . . ducts . . . siding . . . expansion joints . . . copings . . . canopies . . . terrace sheathing.

Send for our booklet, "ONE METAL ROOF"
It shows typical installations, tells about Monel's many advantages, cites long service records. Included in the booklet is a sample of Monel roofing sheet.

MONEL ROOFING

For the "Life-of-the-Building"



EMBLEM OF SERVICE
INCO
TRADE MARK

Mr. Al Trinkle
The International Nickel Company, Inc.
67 Wall St., New York 5, N. Y.

Please send me a copy of "ONE METAL ROOF" and the sample of Monel Roofing Sheet.

Name.....
Title.....
Company.....
Address.....
City.....State.....

F M & M 4-49

THE INTERNATIONAL NICKEL COMPANY, INC.

*Reg. U. S. Pat. Off.

67 Wall Street, New York 5, N. Y.

BUY LAMPS
from your trusted source of ELECTRICAL or INDUSTRIAL SUPPLIES

Champion

Fluorescent and Incandescent Lamps

are distributed through the same efficient, low cost channels as your other plant necessities — your local electrical or industrial supply house.

Your local distributor is in business to provide you with prompt, intelligent service. He offers CHAMPION Lamps because he knows you depend on him to provide supplies of high quality, long service and low cost.

Champion's trained lighting experts in the field are at all times available to help you make the most of lamps and lighting.

To get good lamps and good service, buy from your regular supply house and specify *Champion's*.

CHAMPION LAMP WORKS

Lynn, Massachusetts

A DIVISION OF CONSOLIDATED ELECTRIC LAMP CO

rooms, lavatories, catwalks, ramps. Sketches show uses, characteristics. **19(b)** Asphalt emulsions, cutback asphalts, for water-, damp-proofing; 10 products. Photographs, sketches; specifications. The Flintkote Co., Industrial Products Div.

20

COATINGS—preservative, decorative; Cat. 45A, 56 pp. Different types, uses for each; photographs, application instructions. Tnemec Co., Inc.

21

COMPRESSORS — 4-cylinder, V-type, 2-stage, air-cooled. Features, construction, component parts. Capacities, pressures, dimensions, weights. The DeVilbiss Co.

22

COMPRESSORS—**22(a)** Stationary air compressors, up to 600 cu. ft. displacement; specifications, drive unit dimensions; starting controls, motors, accessories. Photographs, technical data. Bul. 4810, 12 pp. **22(b)** Small single- and 2-stage compressors. Bul. GC-48, 4 pp. Photographs, specifications, types. Selection chart. Schramm, Inc.

23

CONCRETE SLABS—for beamless floors, smooth ceilings. Basis of design, advantages, construction diagrams, selection charts. Smooth Ceilings System.

24

CONDENSERS, EVAPORATIVE—from 2 to 50 tons nominal capacity. Applications, features of 15 types; parts; specifications. Frigidaire Div., General Motors Corp.

25

CONDUIT—rigid, and electrical metallic tubing. Characteristics, physical properties, dimensions, photographs, weights of different types. The American Brass Co.

26

CONSTRUCTION, MAINTENANCE MATERIALS—Line of products includes protective coatings, colors, floors, interior and exterior compounds, roofings, paints. "Handbook of Information," 72 pp. The Truscon Laboratories, Div. of Devoe & Reynolds Co., Inc.

27

CONTROLS, FLOATLESS — for chemical industries, food processing, other applications. Photographs of different types; operation, specifications, applications. Bul. 9800. Automatic Control Co.

28

CONTROLS, REMOTE—"The Key to Remote Control," description of Tru-Lay push-pull types. Operating characteristics, capacity, dimensional drawing; tables of input loads, recommended radius, backlash. Automotive & Aircraft Div., American Chain & Cable Co., Inc.

29

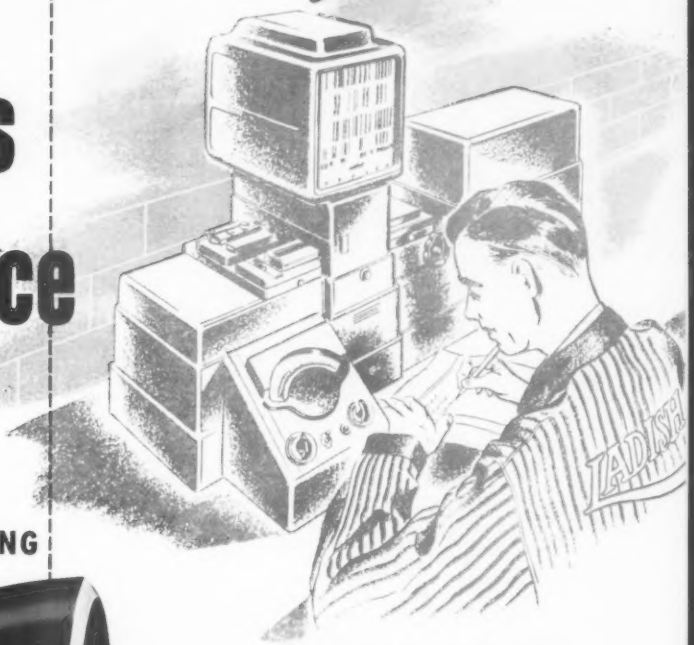
CONVEYORS—complete line; Cat.

Controlled Quality

safeguards performance

OF EVERY LADISH

SEAMLESS WELDING FITTING

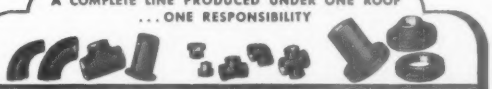


Spectrographic analysis is but one of many Controlled Quality tests conducted by the Ladish Metallurgical Laboratory.

Unsurpassed metallurgical standards . . . are important safeguards by which Controlled Quality assures Ladish fittings of maximum physical properties necessary for peak performance . . . extra protection that you value more with each added year of reliable service.

TO MARK PROGRESS

A COMPLETE LINE PRODUCED UNDER ONE ROOF
. . . ONE RESPONSIBILITY



LADISH CO.

CUDAHY, WISCONSIN
MILWAUKEE SUBURB

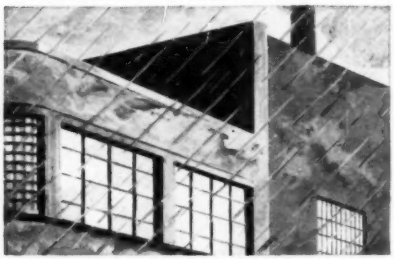
DISTRICT OFFICES: New York • Buffalo • Pittsburgh • Philadelphia
Cleveland • Chicago • St. Louis • Atlanta • Houston • Los Angeles

every piping system deserves the protection of Controlled Quality fittings

Call in SONNEBORN on these *Tough* Problems!

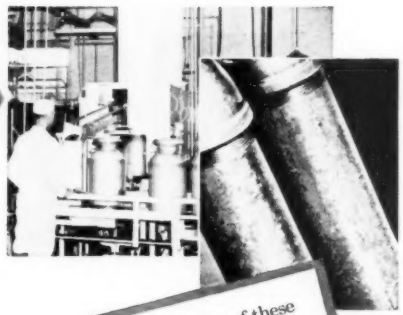
TREATMENT OF CONCRETE

LAPIDOLITH-treated floors last where heavy traffic and trucking break down untreated concrete or terrazzo. Makes traffic surface literally hard as granite. Exclusive, penetrating agent carries hardening agent deep into concrete. Application is easy as mopping the floor.



WATERPROOFING AND DAMPPROOFING

HYDROCIDE for excluding water above or below ground, inside or out. There's a Hydrocide for every problem... from a transparent, colorless film that protects masonry walls from rain penetration... to a one-coat mastic as efficient as the conventional 5-ply membrane system.



PROTECTIVE PAINTING

MARVELWHITE won't yellow in spite of moisture, heat up to 200°, oil or chemical fumes. Amazingly brilliant white... one coat looks like baked-on enamel.

S. R. P. penetrates the scale and bonds to sound metal... stops rust. Better resistance to weather and brine than red lead. Non-toxic. Not affected by fumes or ordinary industrial concentrations of most chemicals.

If you have a tough problem in any of these three fields, call in your Sonneborn Man. Chances are, he has the answers, or can get them for you. If you don't have his name, write us your problem direct.

L. SONNEBORN SONS, INC.

BUILDING PRODUCTS DIVISION

80 EIGHTH AVENUE, NEW YORK 11, N. Y.

108, 182 pp. Photographs of installations, different models; data sheets, layout diagrams. Alvey Conveyor Mfg. Co.

30

CONVEYORS — "Logan Conveyors for the Foundry," 56 pp. Construction, engineering material, construction data, models, illustrated. Logan Co.

31

CONVEYORS, GRAVITY AND POWER—and dispatching systems. Types, sectional index, typical installations in different industries. Cat. 308, 26 pp. Standard Conveyor Co.

32

CONVEYORS, PNEUMATIC DISPATCH TUBES—blowers and exhausters, vacuum cleaning equipment. General catalog including bulletins on various products, photographs, applications, descriptions of each. Lamson Corp.

33

DOOR CONTROLS—automatic. Operation, adaptability, applications. Photoelectric fittings, posts, rails, brackets; specifications: architectural detail drawings, wiring diagrams. 16-pp. The Stanley Works, Door Control Div.

34

DOORS, ROLLING—steel and wood, also rolling grilles, fire doors, partitions. Methods of operation, types, applications. Dimensional diagrams, specifications, photographs. Cornell Iron Works, Inc.

35

DOORS, ROLLING STEEL—grilles, shutters; hand, power, mechanically operated. Cat. G-48, 16 pp. Types features, operation, installation, specifications. Typical installations, clearance dimensions. The R. C. Mahon Co.

36

DOORS, SECURITY — for freight elevators, dumbwaiters; manual, electrically operated. Photographs, specifications, sectional diagrams. Security Fire Door Co.

37

DOORS, UPWARD-ACTING—hand or power operated, and accessories. Various models, construction details, photographs, dimensional data; operating mechanism, hardware, hoists; methods of installation. Crawford Door Co.

38

DRAIN PIPE, STAINLESS STEEL —for roof drainage. Photographs, sketches of installations, elevation diagrams. Parts, fittings, specifications. Armco Steel Co.

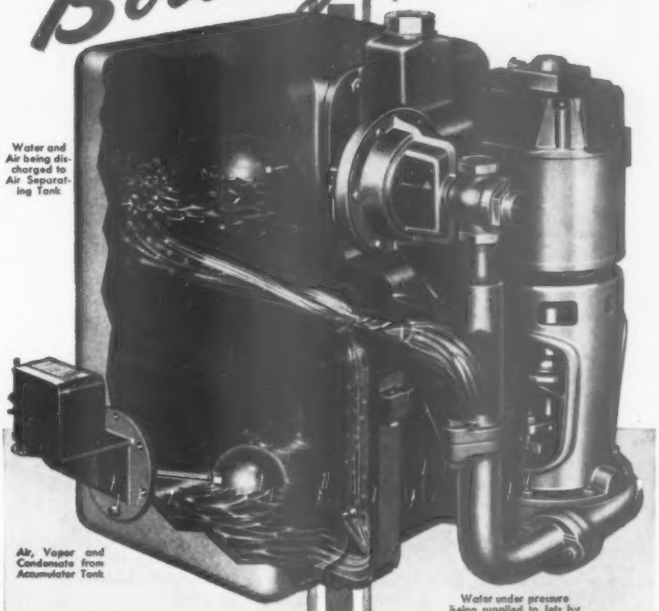
39

DRIVES, SILENT CHAIN — Features, construction details; photographs of types, accessories; selection charts, drawings, photograph prices. Link-Belt Co.

40

DUST CONTROL EQUIPMENT— filters, collectors, dust control sys-

HANDLES WATER ALMOST AT THE *Boiling Point*


Water and Air being discharged to Air Separating Tank
Air, Vapor and Condensate from Accumulator Tank
Water under pressure being supplied to Jets by the Centrifugal Pump

If excessively hot condensate is causing pump trouble in your heating plant, Hoffman-Economy offers positive relief. The exclusive Jet-Type Vacuum Producer featured in the Hoffman-Economy Vacuum Pump assures efficient operation under conditions ordinarily impossible. *It is the simplest and most effective method for exhausting air and water at high temperatures,* simultaneously. Loss of efficiency because of wear does not occur since close clearances are not required.

In every other respect this pump is built to meet and even anticipate modern pumping requirements. All cast iron and bronze construction... stainless steel shaft — noiseless . . . and easy accessibility to all parts.

Hoffman-Economy Type "E" Condensation Pump with vertical pump and motor assembly.

HOFFMAN VACUUM and CONDENSATION PUMPS
are now available in a wide range of types and capacities due to increased production.

HOFFMAN ECONOMY PUMPS

Send for illustrated catalog.

HOFFMAN SPECIALTY CO.
Dept. FM-4, 1001 York St.
Indianapolis 7, Ind.

Famous for Hoffman Valves, Traps, Vacuum and Condensation Pumps, Forced Hot Water Heating Systems.

Pangborn Stops Dust

where Universal Electrical Products are made . . .

At Landers, Frary and Clark, New Britain, Conn., profits depend on efficient production of their famous *Universal* Electrical Products. And . . . their efficient production depends in part on Pangborn Dust Control, for damaging dusts produced by milling machines such as the one shown at left could play havoc in the plant if they weren't collected at the source.

To guard products and machinery, and to insure good industrial housekeeping, this manufacturer of *Universal* toasters, waffle irons, mixers, heaters, irons and fans turns to Pangborn Dust Control to stop the Dust Hog.

Dust is collected at the source through exhaust hoods installed on the milling machines. Then it's conveyed through ducts to a Pangborn "CH" Collector outside the building where it is stored for convenient disposal.

If you have a dust problem, let Pangborn help you solve it. No matter whether you want to improve plant working conditions or efficiency, increase product quality, reduce machine maintenance or recover valuable dust by-products, a Pangborn Dust Control System, tailored to the job by Pangborn engineers, is the positive way to solve it.

Let us make a dust pocket survey in your plant. There's no obligation or cost to you, but it will enable us to recommend the right Pangborn Equipment to help your production. Write for information and get your free copy of "The Control of Industrial Dust." PANGBORN CORPORATION, 282 Pangborn Blvd., Hagerstown, Maryland.

Look to Pangborn for all the latest developments in Dust Control and Blast Cleaning Equipment.

STOP THE DUST HOG

from stealing profits with

Pangborn

DUST CONTROL

tems; Bul. 98, 22 pp. Installation diagrams, photographs. The W. W. Sly Mfg. Co.

41

ELECTRICAL EQUIPMENT—plugs, receptacles, cord connectors. Specifications, sizes, mounting information on different types. Bul. EL-49, 12 pp. Russell & Stoll Co., Inc.

42

ELECTRICAL WIRE CABLE—"Interpreting the 1947 National Electrical Code in Terms of Building Wires and Cables," 20 pp. Tables on current data, temperatures, correction factors, other information. General Cable Corp.

43

ELECTRIC PRODUCTS—condensed Cat. 481, on safety switches; range, lighting, circuit breaker panels; switchboards; wire, fuse grips; "Bustribution" duct; other equipment. Photographs, features, dimensional data, specifiations. Bull Dog Electric Products Co.

44

ELEVATORS — escalators, dumbwaiters; also engineering and planning services. "Autronic elevatoring," electronic signal control, collective control. Construction, installation data. Otis Elevator Co.

45

ELEVATORS—called Oildraulic, for 2-, 3-, or 4-story travel. Features, construction; component parts, control systems. Architects' preliminary data. Cat. Re-302, 12 pp. Rotary Lift Co.

46

FAN—called Fresh'nd-Aire. Different units, features, applications of each; photographs, sketches; test results; specifications, prices. Cory Corp.

47

FANS—for heating, ventilating, air conditioning systems; Model HVA. Performance chart, capacity, pressure; diagrams, ratings of various models. Bul. 3678, 4 pp. Buffalo Forge Co.

48

FANS—Cat. 864, 6 pp. Penthouse units, booster fans, blower and exhauster units, air circulators. Selection chart, specifications, prices. Chelsea Fan & Blower Co., Inc.

49

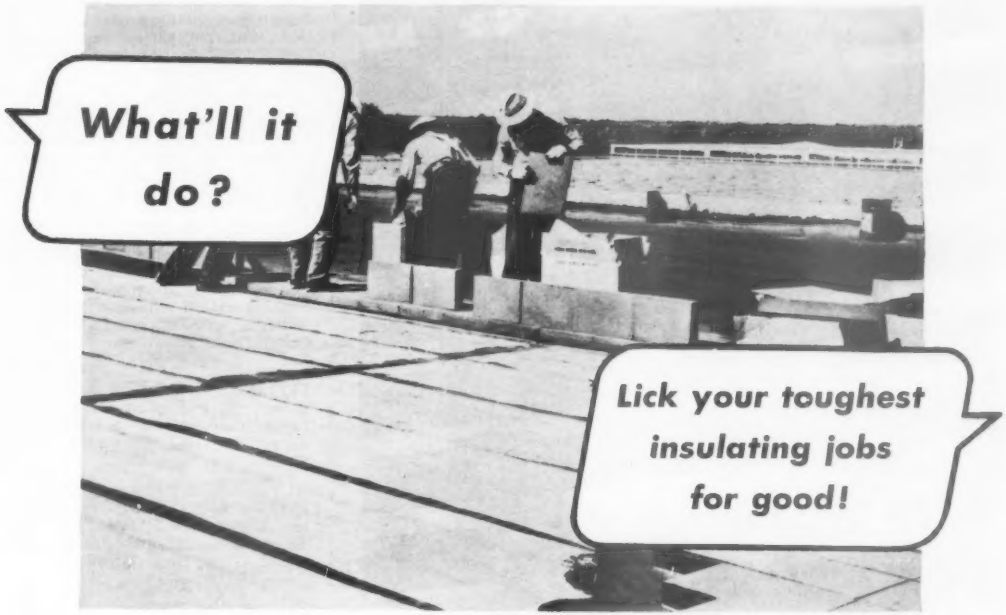
FANS—Adustable blade, Series 1000, called Axivane. Different models; volumes, capacities, features of each. Selector charts, photographs. 28 pp. Joy Mfg. Co.

50

FENCE, CHAIN LINK—posts, pens, partitions. Detail drawings, photographs, descriptions of different types. Cat. 641. 48 pp. Page Steel & Wire Div., American Chain & Cable Co., Inc.

51

FENCE, METAL — posts, frames,



● On jobs that proved too tough for other insulating materials, PC Foamglas is giving years of trouble-free service, without maintenance, repairs or replacements.

For this efficient insulating material is composed of millions of sealed glass cells. It is waterproof, fireproof, vaporproof, acidproof. And therefore it is impervious to the elements that often destroy or impair the insulating value of other materials.

Make sure that first cost is last cost when next you figure on insulation for walls, floors or roofs. Find out how and why PC Foamglas, when installed according to our specifications for recommended applications, retains its original insulating efficiency *permanently*.

We have recently published booklets that give you this important information. Just mail the convenient coupon and you will promptly receive *free* copies of the booklets you check.

This is FOAMGLAS®

The entire strong, rigid block is composed of millions of sealed glass bubbles. They form a continuous structure, so no air, water, vapor or fumes can get into or through the Foamglas block. In those closed glass cells, which contain inert air, lies the secret of the material's permanent insulating efficiency.

FOR ADDITIONAL INFORMATION SEE OUR INSERTS IN SWEET'S CATALOGS

Pittsburgh Corning Corporation
Dept. H-49, 307 Fourth Avenue
Pittsburgh 22, Pa.

Please send me without obligation, your free booklets on the use of PC Foamglas Insulation for:

Roofs..... Walls..... Floors.....

Name.....

City..... State.....

Address.....

PITTSBURGH PC CORNING

® FOAMGLAS INSULATION

... when you insulate with FOAMGLAS... you insulate for good!

WHICH ADVANTAGE

is most important to you when specifying grating?

1 Rigid one-piece construction—easy to install?

2 Maximum open area for light and air?

3 Easy to paint—all surfaces accessible?

4 Non-slip Twisted Cross-Bar?

5 Self-cleaning—no sharp corners to clog?

Blaw-Knox Grating Has Them All!

WRITE TODAY . . .

For this "paper-weight-size sample" on your business letterhead, so that you can have a "close-up" of Blaw-Knox Grating Construction.

BLAW-KNOX DIVISION
OF BLAW-KNOX COMPANY
2125 Farmers Bank Bldg., Pittsburgh 22, Pa.
Offices in Principal Cities

BLAW-KNOX ELECTROFORGED STEEL **GRATING**

gates. Specification tables, features, descriptions, photographs of installations. Cat. 110, 40 pp. Anchor Post Fence Div., Anchor Post Products, Inc.

52

FILTERS, AIR — precipitators, accessories. Series of bulletins on complete line. Descriptions, photographs, diagrams, layouts, characteristics. American Air Filter Co., Inc.

53

FILTERS, AIR—replacement type, for heating, ventilating, air conditioning; called Dust Stop. Description, operation, efficiencies and resistances; installation details. Owens-Corning Fiberglas Corp.

54

FITTINGS — Line of drop-forged wire rope and chain fittings; features, descriptions. Strength and dimension tables, charts; prices. The Thomas Laughlin Co.

55

FITTINGS, WELDING—from seamless steel tubes. Dimensional tolerances, specifications, prices, sizes, types. Globe Steel Tubes Co.

56

FLOOR COATING—called Resn-X; Technical Data Sheet, 4 pp. Specifications, resistance tests, application instructions. Rock-Tred Corp.

57

FLOOR COMPOUND, NON-SLIP—called Formula SN-7. Characteristics, application, coverage. Sugar Beet Products Co., Chemical By-Products Div.

58

FLOOR COVERING—58(a) "4-XM Thin Section" for resurfacing wood, metal, concrete. **58(b)** "Quick-Floor," for patching, repairing, resurfacing concrete. How and where to use, illustrations, in both 4 page folders. Dura-Tred Co.

59

FLOORING MAPLE—Also beech, birch. Grading, measurements, sizes; directions for laying; specifications. Maple Flooring Mfrs. Ass'n.

60

FLOOR MAINTENANCE—"How to Care for Your Floors," 20 pp., outlines step-by-step system for tile, wood, cork, linoleum, concrete, terrazzo. Describes waxes, sealers, cleaners; floor machines. S. C. Johnson & Son, Inc.

61

FLOOR POLISHES, NON-SLIP — "Mr. Higby Learned About Floor Safety the Hard Way," 16 pp. Safety in floor maintenance; various reconditioning, polishing, maintenance products, applications for each. Walter G. Legge Co., Inc.

62

FLOOR RESURFACER — called

ON *NEW* CONSTRUCTION, TOO...

SPRAY-DAY-LITE

covers almost any surface in ONLY ONE COAT!

C-CRUISE CORPORATION

Oct. 1, 1948

The Glidden Co.
San Francisco, Calif.

Gentlemen:

Several months ago we constructed a new plant in Salem, Oregon. When it came time to paint the interior our local contractor recommended Glidden's Spray Day-Lite. He assured us that this material would do the job in one coat. Frankly, we doubted the fact that one coat of paint would cover and hide the dirty surfaces to be painted. Much to our surprise and satisfaction it did, as the enclosed pictures show.

After almost a year we find the paint film to be as good if not better than when first applied. Needless to say we are strong supporters of this wonderful maintenance paint.

Yours very truly,
C-CRUISE CORPORATION
Carl A. Gerlinger

CAG:vc

How's this for PROOF!

....and Glidden COLOR SERVICE

gives you all these extra dividends at no extra cost!

America's first and finest Color Service—*free* when you use Glidden quality paints—will help you to employ colors scientifically to secure many extra dividends from your painting. With Sight Perfection color prescriptions tailor-made for your buildings by Glidden color experts, you can improve seeing conditions, reduce lighting costs, promote safety, build morale. Send coupon below today for all the details.

THE GLIDDEN COMPANY, Dept. BB-49
11001 Madison Ave., Cleveland 2, Ohio

- ☐ Please send literature to indicate the thorough nature of your *free* Sight Perfection Color Service.
- ☐ Please send SPRAY-DAY-LITE Color Chart.
- ☐ You may have your representative call to demonstrate SPRAY-DAY-LITE without obligation on our part.

NAME_____

COMPANY_____ TITLE_____

ADDRESS_____

CITY, ZONE, STATE_____

Glidden

QUALITY Glidden PRODUCTS

Pacemaker in Paints

Get clean, smooth floors in record time with the **TENNANT INDUSTRIAL FLOOR MACHINE**

When trucks lurch and bump over grime-incrusted floors, costly accidents are bound to happen! But with the powerful, heavy-duty TENNANT FLOOR MACHINE one man alone can smoothly remove all soilage in *minutes*. Keeps floors clean, smooth, safe and ready for traffic.

WRITE TODAY for performance data, photos and Bulletin 81.5.

G. H. TENNANT COMPANY
2554 Second Street North
Minneapolis 11, Minnesota

The way to finer floors
TENNANT
Floor Maintenance System

16" REVO-TOOL

16" WIRE BRUSH

FOR HEAVY SOILAGE Tennant 16" *REVO-Tool* accessory has 336 steel cutters. Revolves at 1760 RPM to cut grime loose with smooth hammer-mill action. *Gets results never possible before.*

FOR AVERAGE SOILAGE Tennant 16" Steel Wire Brush attachment smoothly, quickly removes ordinary soilage from factory floors. Picks up dirt at same time. Comes in 3 standard gauges.

Check These Machine Features

- **REDUCES HAZARDS** by keeping floors clean, smooth and dry.
- **ELIMINATES CHEMICALS** or need for soap or water.
- **CLEANS IN 1 OPERATION** by cutting grime loose, smoothing surface and picking up soilage.
- **IS SELF PROPELLING** to provide rapid, easy, one-man operation.
- **CUTS CLEANING COSTS** and requires far less labor.
- **DOESN'T INTERFERE** with plant operation; can be operated at any time.

Plastic Rock. Characteristics, applications, photographs of installations. United Laboratories, Inc.

63

FLOOR RUNNER — corrugated, of composition that is called Rubberlike. Sketches suggest applications, show features. Bird & Son, Inc.

64

FLOOR SURFACING—called Type B Safety-Walk; non-slip, with pressure-sensitive adhesive. Series of bulletins describing uses, types, colors. Minnesota Mining & Mfg. Co.

65

FLOORS, ABRASIVE—advantages, applications, specifications of 4 different forms; photographs. Typical designs, installations. Norton Co.

66

FLOORS, CONCRETE—66(a) Lumnite concrete floors, corrosion-, heat-resistant; methods of placing and finishing; specifications; questions and answers. **66(b)** "Light From Floors," information on reflection qualities; case studies, footcandle variation charts. Photographs, efficiency charts. Universal Atlas Cement Co., U. S. Steel Corp. Subsidiary.

67

FLUORESCENT FIXTURES—Slimline, for individual, continuous installations. Bul. 81, 4 pp. Types specifications; fittings; parts and accessories. Wheeler Reflector Co.

68

GEARMOTORS—Book 1915, 16 pp. Various models, exploded views, design features, load classification tables; styles of mounting; tables of dimensions, specifications; prices. Link-Belt Co.

69

GLASS BLOCK—Called Insulux. Photographs of installations, thermal insulation characteristics, description, designs, sizes. American Structural Products Co., subsidiary of Owens-Illinois Glass Co.

70

HEATING ELEMENTS — called Paracoil; Bul. 20. Description, capacity and dimension tables for different types; installation instructions; conversion tables. Davis Engineering Corp.

71

HEATING EQUIPMENT — 71(a) Propeller-type unit heaters. Bul. J-327, 8 pp. Models, exploded views, construction data, capacities, dimensions. **71(b)** Heating coils Bul. DS-385, 66 pp. Photographs, diagrams, performance data, capacities of different types; piping, installation instructions. The Trane Co.

72

HEATERS—called Venturafin. Bul. 6317; photographs, steam capacity tables, conversion factors, dimen-

New G-E Wiring System Offers Unlimited Possibilities In Modern Lighting Control

Multiple Switching from Many Locations Available at Low Installation Cost With G-E Remote Control

Switch your garage lights ON or OFF from any room in your home—in hospitals, give every patient a light switch next to his bed—in industrial plants and commercial buildings, let every night watchman have a centralized bank of switches for all lights in his area. These are just a few of the many possibilities that can be brought about by the new remote control system, recently announced by the General Electric Company.

Easy to Install

Using existing methods for wiring all power circuits, the General Electric remote control system requires no new materials or techniques except in the switching circuit itself. In this circuit a small, low-voltage relay does the actual switching. Control of this relay can be placed practically anywhere in a building, simply by installing lightweight wires from the relay to conveniently located wall switches, specially developed for this purpose. "Easy as wiring a doorbell," is the way one observer described this circuit.

Because this new system cuts the cost of materials used in multi-switch applications, because it makes possible a large number of controls on any individual circuit, General Electric remote control clears the way for wide use of multi-switch control in structures of all types.

Keeps Costs Down

In residential wiring, this new system means real "dream-home" electrical control even in residences where costs must be cut to the bone. Simple applications include the example of garage lights given above—also attic fan and cellar light controls in various parts of the house. In the completely modern house, all lights and outlets can be controlled from various locations.

In dormitories, institutions, and commercial buildings, General Electric remote control can provide an effective centralized system for lighting control. Wherever "lights-out" regulations are in effect, a master panel of remote control switches can be used to enforce these regulations for an entire building or a whole floor. In commercial structures or plants, a similar system can be used to turn out lights left on after hours. Commercial and industrial operations can profit by the over-all multi-switch control offered by this system.

Offers New Ideas

To everyone concerned with building and remodeling, this new system offers a completely new range of ideas on flexibility in the use of electricity. To the architect, it means a new era in electrical convenience in structures of all sizes and types. To the buyer and the investor, it means increased workability and extra value, now and in the years to come. To the electrical contractor, General Electric remote control offers a vast, new field for his services.

To answer questions on the applications of General Electric remote control—to explain the procedure and the materials required—the General Electric Company has prepared an informative booklet on the subject. This booklet is a valuable guide for everyone interested in this new system. To get your copy early, simply fill out the coupon and mail it today.

Here are the essential components of the new General Electric remote control system: the switch, the small transformer (not shown), the relay, and the lightweight No. 18 wire. All accessories necessary for the system are manufactured by General Electric and sold through your General Electric Construction Materials distributor.

Learn the Facts

Mail Coupon Now

Section D28-434
General Electric Company
Bridgeport 2, Connecticut

Please send me your new booklet on General Electric remote control.

(Name)_____ (Title)_____

(Company)_____

(Street)_____

(City)_____ (Zone)_____ (State)_____

GENERAL ELECTRIC

Extra Safe...

FOR MAINTENANCE WORK

Safety PLATFORM LADDER

This ladder of many uses was designed to eliminate hazards usually found in ordinary step ladders. Broad platform allows working in any direction with both hands free. Rung back can support helper or staging between two ladders. Made of *the finest selected ladder stock to last years longer.* Eight sizes with platform heights from 4' to 18'.

NEW Single and extension ladders made of MAGNESIUM

MANUFACTURERS OF
Ladders, Safety Swinging Scaffolds and other safety-off-the-ground work equipment.

BRANCH OFFICES: Atlanta • Boston • Chicago • Dallas • Detroit • Los Angeles Miami • Milwaukee • Philadelphia • Pittsburgh • San Francisco • Seattle • St. Louis

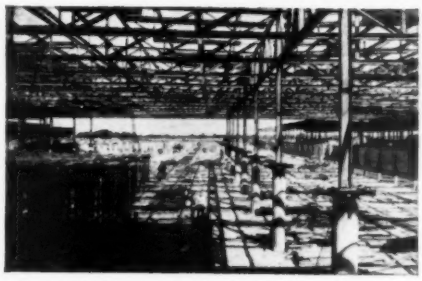
GOLD MEDAL LADDERS SCAFFOLDING

FOR GREATER SAFETY . . . EFFICIENCY . . . ECONOMY

THE PATENT SCAFFOLDING CO., Inc.

38-21 12th Street, Long Island City 1, New York

Here's how the AUSTIN COMPANY USED THE SMOOTH CEILING SYSTEM IN THE NEW UPJOHN PLANT



The Austin Company used the Smooth Ceilings System to combine two types of construction in the new Upjohn plant at Kalamazoo, Michigan.

Special steel grillages which are employed in this system were embedded in the tops of the reinforced concrete basement columns. Structural steel columns which support the roof were then erected on these grillages. After the steel framing for the roof and the roof deck were in place the huge 400,000 sq. ft. slab over the basement was poured.

Saves You Money in Many Ways
The steel grillages employed in this system may be used with reinforced concrete, cast iron, structural steel or steel pipe columns. Embedded in the concrete slab, they reduce the cost of installing ventilation and air conditioning ducts, water supply pipes and electrical conduits. Elimination of flared column capitals and drop panels saves time and reduces cost of form work for concrete.

WRITE TODAY for bulletin showing test data, load capacities and economies of this system.

SMOOTH CEILINGS SYSTEM

802 Metropolitan Life Building, Dept. B, Minneapolis 1, Minn.

sional drawing. American Blower Corp.

73

HEATERS, FORCED AIR SPACE—Bul. 523, 12 pp. Functions, construction, uses. Capacities, dimensions, specifications. Dravo Corp.

74

HEATERS, RADIANT — all-metal electric infrared, called Chromalox. Applications, installation data, construction, operating characteristics. Ratings, lengths, prices. Edwin L. Wiegand Co.

75

HEATERS, TUBULAR—Part 5, Sec. 3, Cat. 54, 22 pp. Types available, construction, photographs of applications. Specifications, equipment. Black, Sivalls & Bryson, Inc.

76

HEATERS, UNIT—electric. Cat. EC-4, 16 pp. Photographs, specifications, capacities, dimensions of models; wiring diagrams; installation data. Electromode Corp.

77

HEATERS, UNIT—77(a) Series 15, Cat. 15C-4, 16 pp. 77(b) Series 16, downblow types; Cat. 16C-1, 8 pp. Both include photographs of types, tables of capacities, conversion factors, dimension data, specifications. Fedders-Quigan Corp.

78

HEATERS, UNIT—Cat. 147, 52 pp. Design, construction; performance data; selection, installation; dimensions, weights; typical, special installations. Photographs, exploded views; capacities; piping arrangements. Medine Mfg. Co.

79

HEATERS, UNIT—heavy-duty floor type, called Janitrol BBC-24 Series. Photographs, typical installations, applications; construction data, dimensions. Surface Combustion Corp.

80

HEATERS, UNIT—general purpose. Design, construction, dimensions, weights, engineering data; piping and wiring details. Bul. U-7, 4 pp. L. J. Wing Mfg. Co.

81

HOISTS, ELECTRIC—called Whippet; cross-section photograph of construction; specifications, suspensions, prices; parts, wiring accessories, diagrams of clearance data. Ford Chain Block Div., American Chain & Cable Co., Inc.

82

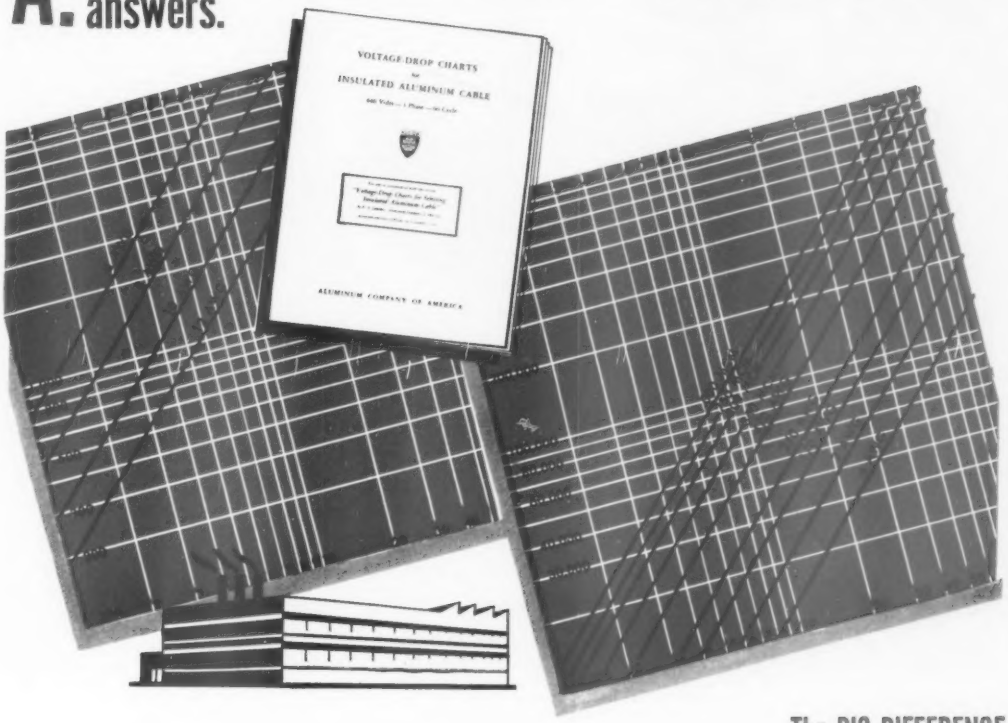
HOISTS, ELECTRIC—called Speedway; features, basic types of mounting, cross-section photograph of construction; specifications, dimensions. Wright Hoist Div., American Chain & Cable Co., Inc.

83

HOISTS, ELECTRIC—Cat. 127, 40 pp. Specifications, types, dimen-

Q. How do I determine voltage drop for aluminum wiring?

A. Your free copy of this ALCOA booklet gives you the answers.



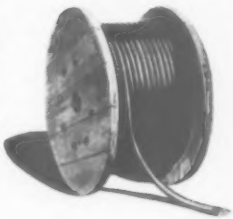
They're worked out here for you—the charts that enable you to determine and specify Alcoa Aluminum Conductor sizes of wire and cable for power and light distribution systems.

These easy-to-understand, easy-to-use data sheets are only a part of the experience Alcoa has piled up in more than 50 years' work with aluminum conductor. Take advantage of it!

Alcoa makes light, strong, conductive E.C.* Aluminum. Leading wire and cable manufacturers draw, strand and insulate it, and sell it under their own trade marks. Ask your wire supplier about it, or write for more information to ALUMINUM COMPANY OF AMERICA, 1900 Gulf Building, Pittsburgh 19, Penna.

*E.C.: *Electrical Conductor* Aluminum

The BIG DIFFERENCE is in your COSTS!



ALCOA EC ALUMINUM

FOR ELECTRIC WIRE AND CABLE

WHEN YOU'RE THINKING OF PLANT MAINTENANCE...

give it both barrels!

Dispense with half-way measures when you're thinking of paint for your plant—give it both barrels: Sherwin-Williams Save-Lite White for the light, cheery surroundings that eliminate eyestrain, speed production . . . Sherwin-Williams "prestudied" Color Harmony that promotes safety, reduces nervous tension, helps produce more and better products.

SHERWIN-WILLIAMS Save-Lite Whites

There's a Save-Lite White paint—flat, eggshell or gloss—that's right for *your* particular requirements! Need a Save-Lite White that gives outstanding resistance to fumes? One that resists *both* moisture and fumes? One that combines moisture resistance with high-speed drying? Then find out more about the great Sherwin-Williams Save-Lite White line! Take advantage of the years of research spent by Sherwin-Williams in formulating these superior whites! If you want *lasting whiteness* that *enhances safety* by reflecting more light, *reduces rejects, cuts unit costs*—you want a Sherwin-Williams Save-Lite White!

Products of SHERWIN-WILLIAMS Industrial Research

SHERWIN-WILLIAMS Color Harmony

Using one of the great variety of prestudied Color Harmony combinations, for walls and machinery, available from Sherwin-Williams, is like putting an extra force to work for you in your plant!

Sherwin-Williams Color Studios engineered all the colors into a group of comprehensive color harmonies that *increase output, improve working conditions, cut down costs!* We know many, many instances of the wonderful savings realized through the use of Sherwin-Williams Color Harmony. Here's just one—a radio tube manufacturer *cut breakage and rejections over 15% by recoloring his machinery.* Let us give you the full Color Harmony story! The Sherwin-Williams Co., Cleveland 1, Ohio. (Export Division, Newark, N. J.)

COVER THE EARTH

SHERWIN-WILLIAMS
INDUSTRIAL FINISHES

sions, capacities. Types of suspension, controls; winches; engineering data. Shepard Niles Crane & Hoist Corp.

84

HOSE, FLEXIBLE METAL — for suction and pressure service, called Flexaust. Bul. 26, 4 pp. Photographs, sketches of applications, types, fittings. American Ventilating Hose Co.

85

INSULATION—"Simplified Physics of Thermal Insulation," 32 pp. Heat, condensation, vapor, vermin, mold, fire, radiant heating types. Installation; specifications; thermal insulation values chart. Infra Insulation, Inc.

86

INSULATION, ROOF — rock cork, felt sided; also smooth-surfaced asbestos, called Flexstone, for built-up roofs. Properties, uses, method of application. Johns-Manville.

87

INSULATIONS — corkboard, cork covering, mineral wool board, foamglas, heat insulation, insulating refractories. Photographs, physical properties, characteristics. Cross-sectional drawings of installations. Armstrong Cork Co.

88

INSULATIONS — blocks, cements, mastic; wool; metal mesh blankets: acoustical tile, board; buildings, roof types. Photographs, conductivity charts. Owens-Corning Fiberglas Corp.

89

INSTRUMENTS FOR MEASUREMENT, CONTROL—Cat. ND46(1), 42 pp., on Speedomax Type G indicators, indicating recorders, recording controllers. Features, uses; design, schematic diagrams, photographs. Leeds & Northrup Co.

90

INSTRUMENTS: INDICATING, RECORDING, CONTROLLING — humidity, temperature, pressure, flow, liquid level, force, time cycle; thermometers; hydrometers; controls; special function instruments. Characteristics, features, types. Bul. 98170, 16 pp. Taylor Instrument Companies.

91

LAMPS, INDICATING—types for various applications. Descriptions, specifications, diagrams; mountings. The H. R. Kirkland Co.

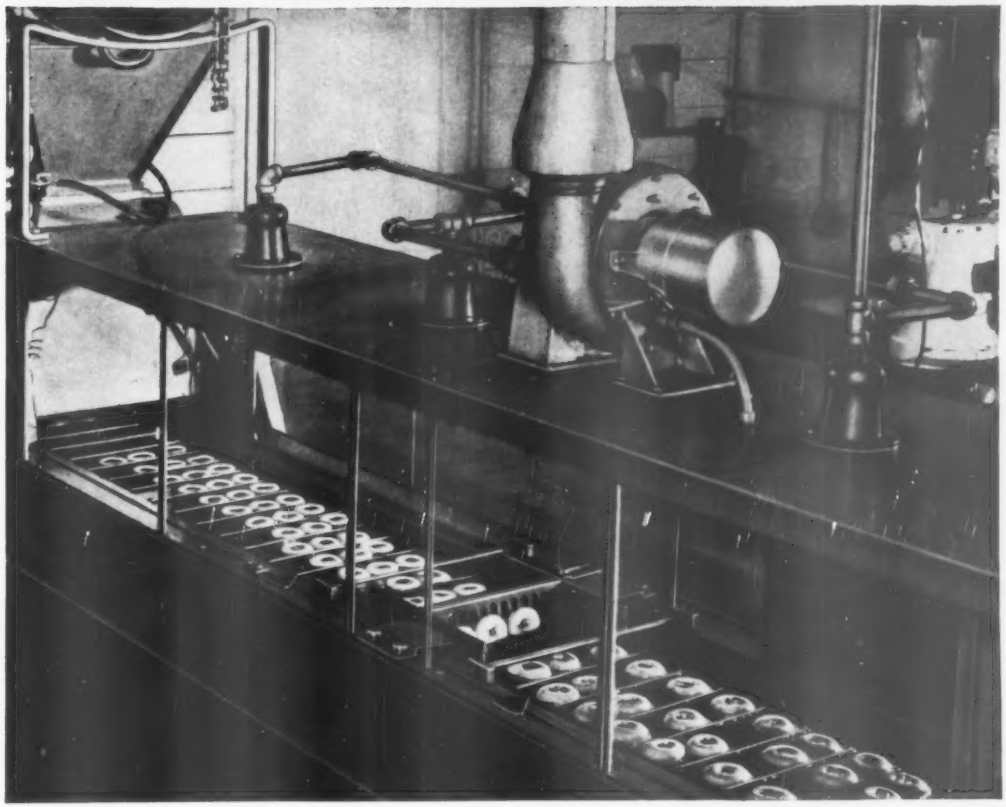
92

LIGHT BULBS — fluorescent, incandescent, electronic. Characteristics, features of various types; candlepower distribution; schedule of prices, ratings, specifications. Duro-Test Corp.

93

LIGHTING EQUIPMENT—Cat. 48,

It's DOUGHNUTS to DOLLARS...



—fire won't live long here!

Ever watch doughnuts cooking to just the right shade of rich, tempting brown? Appetizing, isn't it? But . . . the job calls for hot oil—and every housewife knows that's one of the meanest of fire hazards.

The insurance company recommended CO_2—that's why Swans Bakery in Knoxville came to Kidde for an extinguishing system that would smash the threat of fire in doughnut baking machinery. If the hot oil flashes into flame, the *Kidde** system, *instantly* and *automatically*, shoots fast-acting carbon dioxide (CO_2) through Multijet Nozzles into the machine that bakes the flaky doughnuts. That's the end of the fire! And, of course, the dry, clean CO_2 *can't* damage the machine or spoil its contents. The doughnuts just go right on cooking!

You may never bake a doughnut in *your* plant—but you may have fire hazards that are every bit as tricky. Just ask a Kidde representative what to do about them!

When you think of CO_2, call Kidde!

*Also known as "LUX."

The words "Kidde" and "Lux" and the Kidde seal are trade-marks of Walter Kidde & Company, Inc.

Walter Kidde & Company, Inc. • 432 Main Street, Belleville 9, New Jersey

Kidde

Hard Maple Floor in Rayon Mill—Photograph Courtesy Westinghouse Electric Corporation

resilient

NORTHERN HARD MAPLE for greater efficiency

• Northern Hard Maple is *the truly resilient* flooring for workers' comfort. It's a floor *you can stand to stand on* all day long with least fatigue. It's warm. It's dry. It lasts for years and years in severe service, because its tough, close grain fights traffic abuse, doesn't shred or splinter, resists denting and abrasion.

Yes, Northern Hard Maple deserves to be, and it is, America's favorite factory flooring wood.

Economical, too! You don't need the choice, classic, "ballroom" blondness of First Grade **MFMA** Flooring. All the sturdy endurance —every splendid physical characteristic—of Northern Hard Maple is yours in *full measure* when you specify Second Grade . . . and the cost is appreciably less. The pleasing, varying color tones allowable in **MFMA** Second Grade actually add interesting, distinctive pattern to your floors.

The smoothness, the dense structure, of Northern Hard Maple make sweeping easy. Dust is minimized. Dirt and lint find no crevices to hide. Your upkeep costs stay low through the years. Write for full data on Northern Hard Maple in all **MFMA** grades, and latest official list of **MFMA**-approved maple floor finishes.

See Sweet's

Section 13 g 6, (engineering, 4 j 22) for catalog data. Write us about your maintenance and floor finishing problems.

MAPLE FLOORING MANUFACTURERS ASSOCIATION
Department B—46 Washington Boulevard
OSHKOSH, WISCONSIN

FLOOR WITH *NORTHERN* HARD MAPLE
BEECH AND BIRCH

208 pp., on Goodrich line of fixtures, diffusers, reflectors, types of lights. Photographs, features, tables of specifications, dimensions, capacities. Appleton Electric Co.

94

LIGHTING EQUIPMENT—Cat. 46A, 32 pp.; fluorescent, incandescent. Photographs, sketches show installations, types. Descriptions, dimensions. Edwin F. Guth Co.

95

LIGHTING EQUIPMENT, FLUORESCENT—Fixtures, troffers, accessories. Installation data, sketches, photographs; dimensions; mountings; coefficients of utilization. Leader Electric Co.

96

LIGHTING FIXTURES — fluorescent. Sketches, descriptions of models; tables of dimensions, prices; foot-candle intensities. Day-Brite Lighting, Inc.

97

LIGHTING TREATMENT, CEILING—called Cell-Ceil Cellular Ceiling. **97(a)** Bul. CC-2, "Information and Installation Data," 4 pp. How to plan, estimate, install louvered panels. **97(b)** 4-page folder comparing Cell-Ceil installation with conventional lighting; typical room layout diagram; step-by-step installation information. Federal Enterprises, Inc.

98

LIGHTS, INCANDESCENT—called Speed-Lights, silvered bowl lamps for low-bay applications. Features, installations, types. Silvray Lighting, Inc.

99

LUBRICATORS—"Metered Lubrication for the Small Machine," Bul. 4C, 24 pp. Description of meter-unit system, component parts, different applications. Photographs, cut-away views, diagrams. Bijur Lubricating Corp.

100

LUMBER, PRESSURE-TREATED—by process called Wolmanizing to stop rot, kill termites. Description of process, where and how to use treated wood; photographs of typical uses. American Lumber & Treating Co.

101

MAINTENANCE EQUIPMENT—and tools, safety equipment. General Cat. 27, 60 pp., on commutator, motor, electrical, mechanical maintenance, metal working saws. Photographs, specifications, parts, prices. The Martindale Electric Co.

102

MAINTENANCE, MASONRY AND CONCRETE—"Grouting, Floor Repair, Concrete Reintegration by the Embco Non-Shrink Method," series

A few things "UNISTRUT" ALL-PURPOSE METAL FRAMING Can do for You!

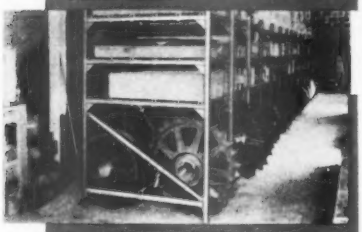
Better and more economically than by any other method of Frame Construction!

Shown here are just a few of the many easy-to-install Unistrut applications for factory and office. Unistrut's great strength without bulk and complete versatility, its 100% adjustability and reusability, provide installation advantages obtainable by no other means!

Heavy Bar Storage Racks

Fluorescent Fixture Supports

Pallet Racks



Parts Storage Racks

Other UNISTRUT Uses:

Build all types of shelving, framing, supports, mounts, racks, tables and benches—tubing assemblies, pipe and cable hangers, fluorescent fixture supports—and many other structures quickly, easily and economically with only a hacksaw and wrench.

Over Ten Million Feet Now In Use!

Unistrut is steel channel with a continuous slot. At approximate points where attachment of another framing member is desired, the Unistrut Spring Nut is inserted, slid to exact position and tightly bolted—see illustrations.

No Drilling—No Welding! Just 3 Quick Unistrut Steps!

One of These Bulletins may prove profitable!

1. The Unistrut Method of Hanging Fluorescent Fixtures
2. Unistrut Clamps for Pipes, Cables and Conduit
3. Unistrut Roller Pipe Supports for 1" to 36" diameter pipe
4. Unistrut Pallet Racks and Stock Racks
5. Unistrut Bar and Tubing Storage Racks
6. Unistrut Continuous Concrete Inserts
7. Unistrut Tubing Clip Assemblies

To receive above **FREE** bulletins—check bulletin numbers in boxes provided in coupon below:

UNISTRUT PRODUCTS COMPANY
1013 W. Washington Blvd.
Chicago 7, Illinois

Gentlemen: Please send me the bulletin checked below:

1☐ 2☐ 3☐ 4☐ 5☐ 6☐ 7☐

Name .....

Company .....

Address .....

City ..... Zone .... State .....

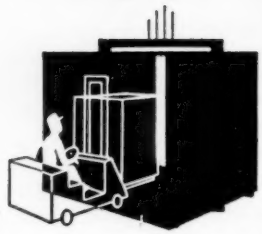
Legal Notice: Unistrut Products are manufactured in the U. S. A. under one or more of the following U. S. Patents.
2327587 2345650 2380379
2329815 2363382 2405631
Other U. S. Patents pending. Patented in other countries.

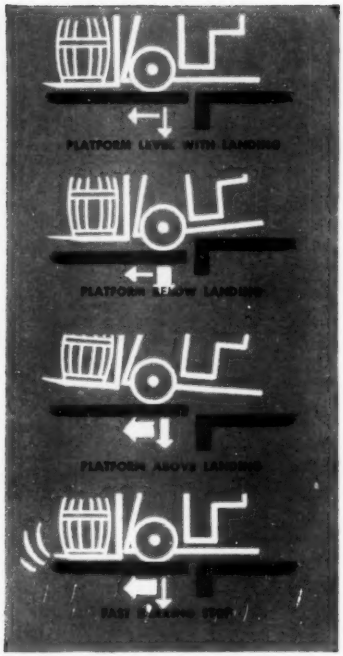
ALL PURPOSE METAL FRAMING

UNISTRUT Products Company

1013 West Washington Boulevard
Chicago 7, Illinois • Phone MO 6-2665
Representatives in Principal Cities

Power truck impact





ON FREIGHT ELEVATORS You've watched power trucks in action. They may weigh 8,000 pounds, or more, plus a proportionately heavy pay load. They're speedy, hard driven, fast stopping. They 'punish' the elevator platform and structure with a wide variety of vertical and horizontal impact forces—as shown by the size of the arrows in the diagrams above. These impact forces tend to thrust, tilt and twist the entire elevator structure.

Obviously, power truck traffic can be handled safely only in freight elevators that have been specifically designed—*to take power truck impact.* It's just one of several reasons why you should change your thinking about freight elevators when you change from hand to power truck loading.

FREE! OTIS Bulletin 705 explains what happens when a power truck 'punishes' a freight elevator with impact loading . . . off-balance loading . . . and extra static loading. It shows how OTIS Pow-R-Truck Freight Elevators, with lifting capacities from 8,000 to 20,000 pounds and over, meet these severe stresses. And it also gives platform dimensions and hoistway requirements. Write for your copy. Otis Elevator Company, 260 Eleventh Avenue, New York 1, N. Y.

STANDARDIZED
POW-R-TRUCK ELEVATORS

DESIGNED TO TAKE POWER TRUCK 'PUNISHMENT'

of bulletins on control of shrinkage in concrete. The Master Builders Co.

103

MASKING TAPE, APPLICATOR—"Speed Up and Simplify the Application of Concrete Curing Blankets with Scotch Wetordry Masking Tape" and heavy-duty floor tape applicator—Cat. P-FT, 4 pp. How to apply, advantages, directions for reuse. Minnesota Mining & Mfg. Co.

104

MATERIALS HANDLING ATTACHMENT—Called Load-Grab for palletless materials handling. Photographs of different models, applications; 8 pp. Hyster Co.

105

METAL BUILDING PRODUCTS—**105(a)** Steel joists, deck, reinforcing, metal lath. Specifications, loading tables, installations, different types. **105(b)** Steel windows, doors, 86 pp. Photographs, descriptions, specifications of various types. Truscon Steel Co.

106

METAL, EXPANDED—How made, used; photographs of various types, installations. Technical data, capacities; selection guides. United States Gypsum Co.

107

METAL FRAMING—called Unistrut. Series of bulletins on various types of racks, concrete inserts, clamps, supports, fittings. Design, installation procedure. Unistrut Products Co.

108

MIXER, CONCRETE — 3½-cu.-ft. tilting type. Features, specifications, types. Muller Machinery Co., Inc.

109

MOTORS, ELECTRIC — fan-duty. Types, sizes, speeds, mountings; photographs, applications of different kinds; tables of motor dimensions, capacities, horsepower and frame specifications. The Emerson Electric Mfg. Co.

110

PAGING SYSTEMS—Series of bulletins describing line, suggested uses for different types. Photographs, schematic wiring diagrams. Also relays, bells, horns, whistles. The Autocall Co.

111

PAINTS—for maintenance, for interior, exterior surfaces; fume and fungus resistant finishes; non-toxic paints; caulking compound; accessory products. Condensed specifications, descriptions. Services available. Devoe & Raynolds Co., Inc.

112

PARTITIONS, TOILET — shower bath cabinets, hospital cubicles, doors, hardware, accessories. Descriptions, finishes, specifications, layouts. The Sanymetal Products Co., Inc.

113

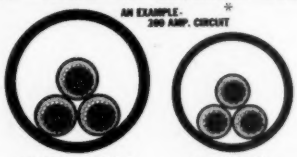
PLANTS—113(a) "Complete Indus-

FAMOUS PITTSBURGH
hydro-lube*
NOW IN BRONZE!
PITTSBURGH
LUBE
*hydraulically lubricated
EVERY TIME VALVE IS OPERATED
Write for new 16 page catalogue
PITTSBURGH
SINCE 1902
PITTSBURGH VALVE & FITTINGS CORP.
BARBERTON, OHIO, U.S.A.

CRESCENT

ENDURITE - Type RH

Gives Greater Current Carrying Capacity per Dollar of Installed Cost



250,000 CM TYPE R
Requires $2\frac{1}{2}$" Conduit. Maximum permissible operating temperature 60°C.

3/0 TYPE RH
Requires 2" Conduit. Maximum permissible operating temperature 75°C.

The superior heat resistant characteristics of CRESCENT ENDURITE INSULATION with its higher permissible operating temperature and therefore greater current carrying capacity, permit the use of a smaller size of conductor, and in most cases smaller size of conduit at less cost than would be required for Type R Wire for the same load.

For light loads requiring small sized conductors, Voltage Drop is the determining factor in choice of wire size. Usually in sizes No. 6 AWG and heavier for power circuits or No. 1 AWG and heavier for lighting circuits, CRESCENT ENDURITE Type RH Wire & Cable gives the lowest installed cost-per-ampere of useful circuit capacity.

In accordance with 1947 National Electrical Code

CRESCENT
INSULATED WIRE & CABLE CO.
TRENTON, NEW JERSEY

OVER 60 YEARS EXPERIENCE

In HAND PUMPS...

BLACKMER leadership is

Blackmer 210 . . . has won wide acceptance in fueling farm tools because of improved trouble-free design. Full 10 GPM at easy turning speed.

Performance PROVED!

In quality, dependability and service, Blackmer offers the finest rotary hand pumps that money can buy. The 404 is typical of their proved-in-use performance. Its smooth cranking action transfers all types of liquids in a full, non-pulsating flow. Blackmer "Swinging Vane" pumping elements are self-adjusting for wear. Self-priming, the 404 handles suction lifts up to 20 feet without a foot valve. It is designed for mounting on barrels, drums, underground and skid tanks. Blackmer hand pumps have proved their superiority in all types of applications all over the world. Other models are available for larger capacity or specialized requirements. Write for details.

BLACKMER PUMP COMPANY GRAND RAPIDS, MICHIGAN

trial Plants; Production Lines and Special Machines; Furnaces, Ovens, Dryers," Bul. 127. **113(b)** Furnaces, Ovens, Kilns, Machines; Bul. No. 121. Both include photographs of installations, equipment; engineering service. Continental Industrial Engineers.

114

POWER DISTRIBUTION SYSTEM—Bus duct, what it is, how used, types available; features; construction. Westinghouse Electric Corp., Standard Control Div.

115

POWER UNITS—hydraulic electric, Gyrol fluid drive. Cutaway, exploded views; photographs, description; ratings, dimensions. American Blower Corp.

116

PRODUCTS LIST—Booklet DH-509, 20 pp., lists principal products made by company's 13 divisions, 7 associate companies; sales offices. American Chain & Cable Co., Inc.

117

PROTECTIVE COATING — called Apexior No. 3, for cold-water-submerged steel; Bul. 1540. Various uses, service data, application equipment. Other protective coatings. The Dampney Co. of America.

118

PROTECTIVE COATINGS—118(a) Kleencrete, for cleaning, protecting concrete, tile, brick, stucco. How to apply, what it does, prices. **108(b)** Evercrete, to make waterproof, dustproof, acid- and oil-resistant concrete, cement, stucco, brick. Directions, prices. Evercrete Corp.

119

PROTECTIVE COATINGS—119(a) Rust preventive, called Rustrem. **119(b)** Wood preservative, Woodtrem. **119(c)** Heat resistant paint, Heatrem. All include typical uses, advantages, application instructions. Speco, Inc.

120

PUMPS—Series of bulletins describes complete line, with photographs, dimensions, tables of specifications, pipe friction, performance, pressure ratings. The Deming Co.

121

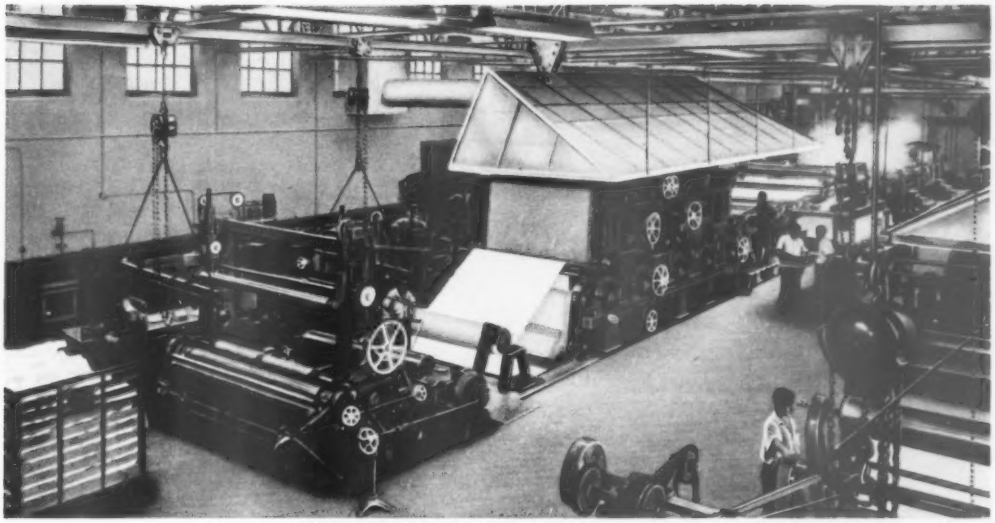
PUMPS, ROTARY—Cat. 106, 40 pp. Design, operating features, diagram of operating cycle. Specifications, dimensions, capacities, pressures. Photographs, diagrams of different types. Blackmer Pump Co.

122

RADIATORS, CONVECTOR—Type F. Heating element design, other construction, installation details. Cutaway views, diagrams. Capacities, ratings; hot water steam factors. Bul. FC-1, 8 pp. Fedders-Quigan Corp.

123

RESURFACING PRODUCTS — for underfoot surfaces, roofs, sidings, wall surfaces, miscellaneous protec-



BETTER WORKING CONDITIONS! Smith Paper, Inc., Lee, Mass. uses Color Conditioning Green on sidewalls to psychologically overcome the high heat and humidity present in paper mills. Light grey on the machinery maintains proper degree of "brightness"... lets workers see what they are doing.

SAFETY! Du Pont Safety Color Code "points up" hazardous areas... helps prevent personal injury. Colors and symbols quickly identify first-aid and fire protection equipment.

MORALE! Pleasant surroundings give workers a "lift," pay off in better work. Throughout your buildings... in rest rooms, cafeterias, offices, corridors, etc., COLOR CONDITIONING imparts an agreeable, efficient atmosphere.

SERVICE! A Du Pont maintenance painting expert is ready to show you, without charge, how COLOR CONDITIONING can benefit your plant... whatever your particular needs may be!

DU PONT COLOR CONDITIONING

steps up production and profits

GREATER employee efficiency, safety, and morale . . . increased rate and quality of production: these are the benefits you get from Du Pont Color Conditioning!

Far more than a "paint job," Color Conditioning is a scientific painting plan that extracts full value from the *correct* use of color . . . *at no extra cost*. Hundreds of industrial plants are proving its worth today . . . in helping employees see better, feel better, work better.

Du Pont Color Conditioning Paints, Safety Color Code and Machinery Enamels . . . specially formulated for every interior surface... assure you longer wear and greater savings in maintenance painting throughout your plant. Mail coupon for full information.

DU PONT

BETTER THINGS FOR BETTER LIVING . . .
THROUGH CHEMISTRY

E. I. du Pont de Nemours & Co. (Inc.)
Finishes Division, Dept. F-94
Wilmington 98, Del.

Please send me, without obligation, your 32-page book, "Color Conditioning for Industry."

Name _____

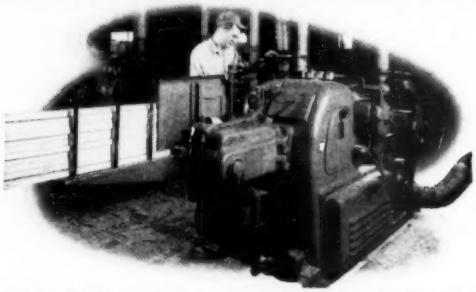
Title _____

Firm Name _____

Address _____

Put this **WINNING COMBINATION** *to work for you!*

Hines EXPERT ENGINEERS



Hines MODERN MACHINES

Hines LUMBER SUPPLY

PROTECTED QUALITY — THE NAME OF HINES IN LUMBER — FROM TREE TO YOU

Which one of the three—engineering, production, lumber procurement—is bothering you? Hines is ready and able to solve any one of your problems as far as wood is concerned —or take over the complete job of wood parts production. We are doing a money saving job for many large manufacturers and are ready to go to work for you. If you are interested in cutting costs, phone, write or wire today!

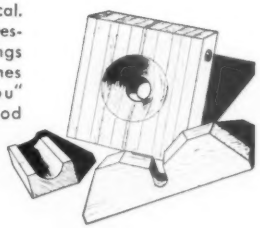
EDWARD HINES LUMBER CO.

ENGINEERED FABRICATION DIVISION

2431 So. Wolcott Ave., Chicago 8, Illinois

WOOD PARTS IN ALL SHAPES AND SIZES

• In many cases wood is better and more economical. It will pay to investigate the savings effected by Hines "forest to you" service on wood parts.



tive coatings. Applications, characteristics. "Over the Rough Spots." 48 pp. Stonhard Co.

124

ROOFING—134(a) Corrugated asbestos-cement roofing and siding. Technical data, methods of application; enclosure strips, fasteners, accessories. Detail drawings, sectional views. Form 4508, 12 pp., **124(b)** Built-up roofs, various applications over different foundations. Specifications, application data. The Philip Carey Mfg. Co.

125

SAW, ALL-PURPOSE WOOD—Basic unit with interchangeable cutting tools. Photographs show various uses, how to change and adjust for different work. DeWalt, Inc.

126

SCAFFOLDING, LADDERS—trestles, brackets, jacks, hoists, sidewalk bridges. Photographs, construction detail, types available. The Patent Scaffolding Co., Inc.

127

SCALES—called Load King. Platform, weighing, bench, counting models. Explanation of Magnetrol scale mechanism. Capacities, dimensions of various models; exploded views of construction. The Yale & Towne Mfg. Co.

128

SHELVING, STEEL — convertible. Photographs of different types, load capacities, specifications, assembly details. Also bins, drawers, boxes, sliding doors, rack, trucks, lockers. Berger Mfg. Div., Republic Steel Corp.

129

SHUTTERS—and penthouses; manually and motor operated. Types, dimensions, diagrams. Bul. SH-1, 4 pp. L. J. Wing Mfg. Co.

130

SIGNALS—Series of bulletins on paging units, bells, horns, sirens, accessories. Photographs, descriptions, specifications; current data. Federal Electric Co., Inc.

131

SIGNAL SYSTEMS—131(a) Proprietary protective systems, for fire prevention and control, for supervision of industrial operations. Photographs, uses of various units. **131(b)** Sprinkler water flow alarm service, component parts, controls, capacities, **131(c)** Fire alarm systems, boxes, signals, printing recorders, punch registers. Photographs, descriptions of each. The Autocall Co.

132

SIGNAL SYSTEMS—bells, buzzers, horns, sirens; clocks; annunciators; intercommunication; fire alarms; miscellaneous equipment. Series of bulletins describing, illustrating different types; alphabetically indexed. Price lists. 810 pp. Edwards & Co., Inc.

133

SMOKE ELIMINATOR — "Where

Only Wing Revolving Heaters Circulate the Heated Air Around Obstructions

AS the air from roof or ceiling areas is passed through the heating element of a Wing Revolving Unit Heater and projected downward through discharge outlets that slowly revolve, the heated air is not delivered to the working area in single-direction blasts, but in moving air-streams that sweep slowly through 360 degrees, covering successively every direction. The heated air moves around and under obstructions reaching to walls and remote corners. Every part of the plant is thus kept at an invigorating comfortable temperature.

L. J. Wing Mfg. Co. 162 W. 14th St., New York 11, N. Y.

Factories: Newark, N. J. and Montreal, Canada

Wing

Revolving UNIT HEATERS

Regardless of the size or type of your plant . . .

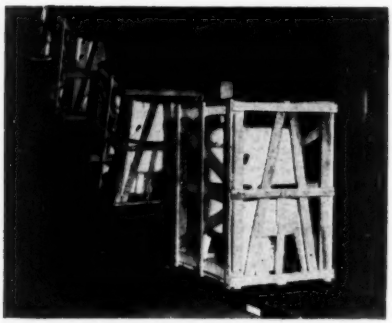
you can beat n. h.* taxation

***NEEDLESS HANDLING** always means needless costs of operation—needless taxes on profits. That is true in any business. Check the handling of materials in your receiving and shipping departments, in work-in-process and in storage. You may be paying from two to twenty times more than is necessary!

Rapistan

MATERIAL *flow* EQUIPMENT

cuts operating costs . . . quickly pays for itself . . . keeps on making profits for you—indefinitely



The modest cost of Rapistan Material Flow equipment usually can be written off in a few months. Rapistan is the most flexible line of package-type conveyors in the country. You can get a simple, short length portable conveyor for truck loading, a between-floors power-belt, or a combination of multi-directional gravity and power flow. Rapistan equipment is easy to install, can be delivered promptly. With Rapistan you get assurance of the best in experience, quality and service.

free help! *Get this factual data on how to eliminate needless costs of operation. Write on your business letterhead for your copy of* "Rapistan Material Flow at Work." *No obligation. See how plant carloading was cut from 80 to 8 man hours . . . how storage confusion was eliminated and loading time reduced 66% . . . how a processor saved $200 a week . . . how 2 men do the work of 10 with less fatigue . . . and how Rapistan can work for you. Just write to—*

THE RAPIDS-STANDARD COMPANY, INC.
18 Rapistan Building, Grand Rapids 2, Mich.
Representatives in All Principal Cities

There Is Smoke There Is Waste," 4-page folder. Description of catalytic combustion control process, equipment. Apex Engineering Co.

134

SOUND SYSTEMS—amplifiers, P.A. systems, recording equipment, players, accessories. Cat. 4849, 20 pp. Photographs, descriptions, applications, specifications. Bell Sound Systems, Inc.

135

SPRAY PAINTING EQUIPMENT—Methods of using various types, illustrations, descriptions. The De-Vilbiss Co.

136

SPRINKLER SYSTEM — combination wet and dry, called Dualguard. Features, automatic operating principles, auxiliary devices. Also deluge systems. Rockwood Sprinkler Co.

137

STEAM SEPARATOR SELECTOR CHART — Saturated steam flow chart, superheat scale, pressure drop scales; method of determining pressure drop; examples. Wright-Austin Co.

138

STEAM TRAPS—"Solving Steam Trap Problems," Form 149, 36 pp. Different uses, correct type for each; photographs, drawings, diagrammatic cross-sections. Tables of trap ratings, specifications, capacities; prices. The V. D. Anderson Co.

139

STEAM TRAPS—for power plants, steam distribution systems, steam processes, other types. Construction details, exploded views; thermodynamic properties of saturated steam. Descriptions, capacities of different models. Bul. T-1739, 16 pp. Yarnall-Waring Co.

140

STEEL—140(a) Carbon steel bars and bar-sized shapes, 12 pp. Sizes, fractional increments, weights. **140 (b)** Hot rolled carbon steel structural shapes, 72 pp. Nominal dimensions, weights, properties, details of different types. Carnegie-Illinois Steel Corp., subsidiary of U. S. Steel Corp.

141

STEEL BUILDINGS, PREFABRICATED—called Rigidsteel. Features of joints, rafters, foundations, connections, roofs, walls; materials, construction. McCloskey Co. of Pittsburgh.

142

STEEL, CLAD — "Fabrication of Lukens Clad Steels," 90 pp. Types, fabrication, finishing, tests; welding details. Sketches, diagrams, photographs. Lukens Steel Co.

143

STEEL, CORRUGATED—for roofing, siding; coated with asphaltic-plastics. Styles, coverage dimensions, spacing charts. Where appli-

We BUILD EVERY FREIGHT ELEVATOR TO WITHSTAND POWER-TRUCK LOADING

There is important news in this headline for you.

Now, when you buy freight elevators of more than 6000 lbs. capacity, you no longer have to specify platforms built to take the pounding of power-truck loading. Just say "Westinghouse."

How does this benefit you?

First, platform, guide shoes, rails and all other parts have been built for power-truck loading *all the way through.*

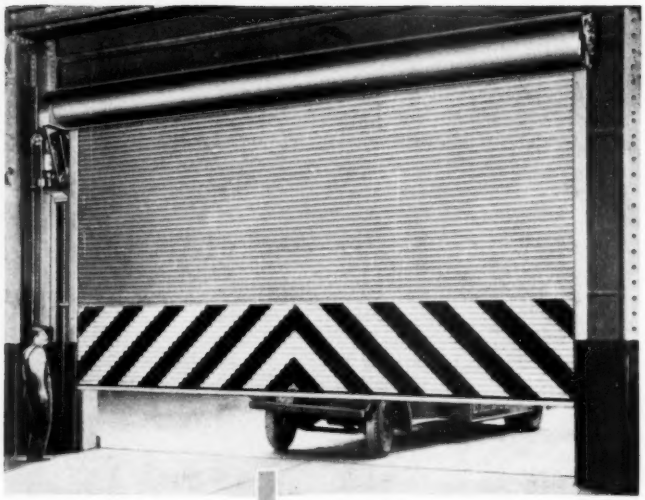
Second, if you don't use power trucks to load your elevators now, the chances are that some day you may. And when you do, your elevators will be ready for them without the expense and delay of modification.

That's why, when you want to be sure of your freight elevators, come to Westinghouse.

J-98532

YOU CAN BE SURE...IF IT'S

Westinghouse



KINNEAR STEEL ROLLING DOORS

Space-Saving Convenience

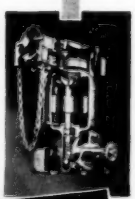
Plus a Bonus In Protection

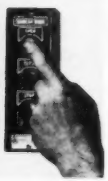
It's easy to see why Kinnear Rolling Doors offer so many cost-cutting, time-saving advantages. They open straight upward and coil into a small area above the doorway. As a result, all floor, wall and ceiling space around the opening is *fully usable at all times.* No areas need to be reserved for door action. When opened, the doors clear the entire doorway. They stay completely out of the way, safe from damage by wind or vehicles.

Along with this high efficiency and convenience, you get a bonus of all-around protection and low-maintenance service. The strong but flexible *Kinnear-originated* curtain of interlocking steel slats gives extra protection against fire, wind, riot, intrusion, and accidental damage. Kinnear Rolling Doors are built to fit any openings in old or new buildings. Motor or manual control. Write for details.

MOTOR OPERATION

The rugged Kinnear Motor Operator shown at right can be added to any Kinnear Rolling Door for maximum speed, ease, and convenience of operation.





REMOTE CONTROL

In addition to push-button controls at the doorway, others may be added, at any number of convenient points, on motorized Kinnear Doors.

KINNEAR ROLLING DOORS

THE KINNEAR MANUFACTURING CO.

Factories: 1540-60 Fields Ave. • Columbus 16, Ohio

1742 Yosemite Ave., San Francisco 24, Calif.

Offices and Agents in all Principal Cities

cable, methods of fastening. Plasteel Products Co.

144

STEEL STORAGE EQUIPMENT—lockers, bins, cabinets, shelving; types, sizes, models. Standard Steel Equipment Co., Inc.

145

STEEL WALLS—movable, flush and paneled types. Photographs, layout diagrams, construction details; characteristics, finishes, uses. Cat. 49, 68-pp. The E. F. Hauserman Co.

146

SYSTEMS: WINDOW WASHING, COAL HANDLING—Explanation of operation, photographs, layout sketches. Also cranes for loads up to 3 tons. Form G-536, 6 pp. The Cleveland Crane & Engineering Co.

147

TIMER, INTERVAL—Type IG, for use when electrical equipment is to be manually turned on, run for a pre-set time, automatically stopped. Operation details, features, construction, dimension diagram, photographs of standard types, time ranges, prices. The R. W. Cramer Co., Inc.

148

TOOL ROOM, SHOP EQUIPMENT—bins, racks, shelving units, drawers, inserts, miscellaneous storage equipment. Photographs, dimensions, descriptions of different types. Berger Mfg. Div., Republic Steel Corp.

149

TRAILERS—"Specialized" Trailers for "The Trackless Train," Bul. A-999, 16 pp. Dimensional drawings, features, capacities, construction details of different types. The Mercury Mfg. Co.

150

TROFFERS—with adjustable Aligner hanger. Sketches of installations, types, panels. Smithcraft Lighting Div.

151

TRUCKS, PALLET—called Hand Lift and Worksaver. Hydraulic mechanism, capacities, specifications, features of different types. Photographs, typical uses. Description of pallet system, recommended pallet designs, diagrams. The Yale & Towne Mfg. Co., Philadelphia Div.

152

VACUUM—"132 Unusual Uses for Spencer Vacuum—from Almonds to Zinc," Bul. 144, 20 pp. Alphabetized ideas illustrated for uses of vacuum equipment. The Spencer Turbine Co.

153

VACUUM CLEANING EQUIPMENT—4-pp. Booklet A-706. Heavy-duty portable and stationary systems, applications, equipment. Photographs of installations. U. S. Hoffman Machinery Corp., Air Appliance Div.

154

VALVE, FOOT—Model 201. Con-

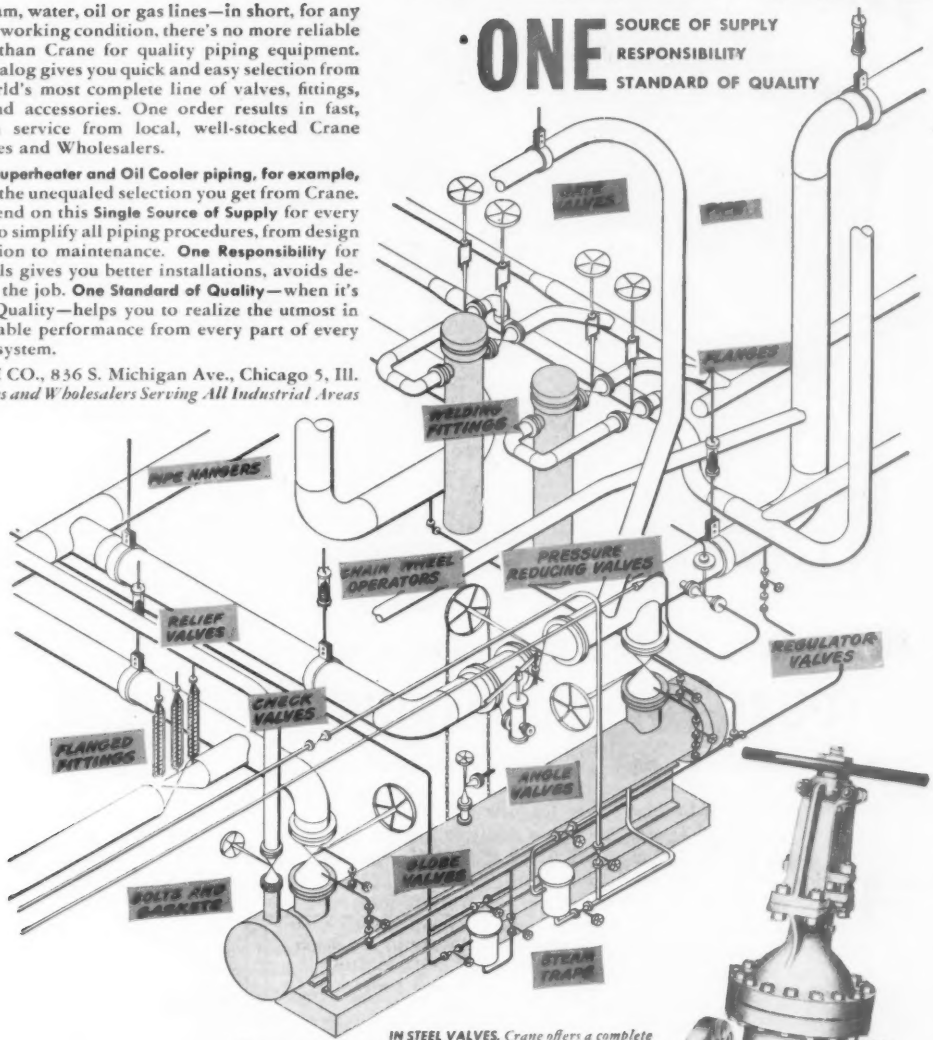
It's CRANE for complete selection for any power piping

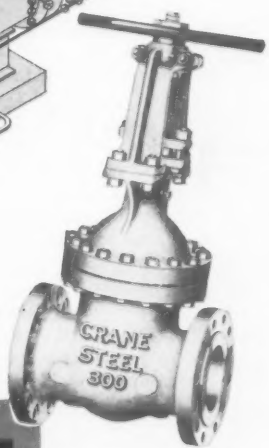
For steam, water, oil or gas lines—in short, for any fluid or working condition, there's no more reliable source than Crane for quality piping equipment. One catalog gives you quick and easy selection from the world's most complete line of valves, fittings, pipe and accessories. One order results in fast, modern service from local, well-stocked Crane Branches and Wholesalers.

This Desuperheater and Oil Cooler piping, for example, typifies the unequaled selection you get from Crane. To depend on this **Single Source of Supply** for every item is to simplify all piping procedures, from design to erection to maintenance. **One Responsibility** for materials gives you better installations, avoids delays on the job. **One Standard of Quality**—when it's Crane Quality—helps you to realize the utmost in dependable performance from every part of every piping system.

CRANE CO., 836 S. Michigan Ave., Chicago 5, Ill.
Branches and Wholesalers Serving All Industrial Areas

ONE SOURCE OF SUPPLY
RESPONSIBILITY
STANDARD OF QUALITY





IN STEEL VALVES, *Crane offers a complete line . . . gates, globes, angles, checks . . . in all patterns and sizes . . . in pressure classes from 150 to 1500 pounds. Shown here, Crane No. 33X 300-pound Cast Steel Wedge Gate, trimmed to handle temperatures up to 900 deg. F. Flanged, screwed or welding ends. See your Crane Catalog, p. 304.*

EVERYTHING FROM . . .

VALVES • FITTINGS
PIPE • PLUMBING
AND HEATING

CRANE

FOR EVERY PIPING SYSTEM

NEW Helpful Booklet—

Plus Central's industrial site-finding service...

YOURS FOR THE ASKING!

DO YOUR PLANS call for a new plant "from the ground up"... or one that's ready built? In either case, Central's Industrial Department will gladly do your preliminary hunting. Result: you save time and get a wider choice of suitable sites.

Our industrial specialists have details on many available locations. They *know where to look* in Central's 11-state area . . . with its unequalled combination of manpower, markets, materials and ports. And they know how to help you plan the best use of Central's modern facilities . . . including its vast fleet of new freight cars, new passenger cars, new Diesels.

To learn the advantages these experts can help you secure, write for the new booklet: "FINDING A CENTRAL LOCATION." It's yours for the asking . . . and so is the efficient, confidential service behind it.

INDUSTRIAL DEVELOPMENT DEPARTMENT
NEW YORK CENTRAL SYSTEM
466 Lexington Avenue
New York 17, N. Y.

Please send me your new booklet.

NAME _____

FIRM _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

C

New York Central

The Smooth Water Level Route

struction features, photographs, cross-sectional drawing. Mead Specialties Co.

155

VALVE, SELF-VENTING HOT WATER AIR—Form 481408-A. 6-pp. Features, operating principles, cross-sectional diagram, applications. Taco Heaters, Inc.

156

VALVES—fire hydrants, accessories; Cat. 17M. 302 pp. Complete line, indexed by service pressure, by figure number, and alphabetically. Photographs, dimensional diagrams, specifications, uses of different types. Darling Valve & Mfg. Co.

157

VALVES, CONTROL — for oil-hydraulic systems. **150(a)** V-12 series, with from 1 to 3 plungers for individual control of 1 to 3 single- or double-acting hydraulic cylinders; **150(b)** V-13 series, plunger-type valves, with parallel circuit; **150(c)** V-16 series, plunger-type with built-in press relief and check valves; **150(d)** 3000 series 4-bolt oil-hydraulic gear pump. Capacities, dimensions and connections, exploded views, diagrams, specifications on all four. Hydraulic Equipment Co.

158

V-BELTS—Wall chart, 13½x21½ in., 2-color. How to measure, uncouple, couple, install. Comparison length table. Photographs show procedures. Manheim Mfg. & Belting Co.

159

VALVES, UNIONS—**159(a)** 4-page folder, chrome-plated ball-type valves. Features, specifications; photographs, cut-away views, diagrams. **159(b)** Cold forged steel unions for flammable liquids. Photographs, dimensions, specifications of different types; diagrams. Rockwood Sprinkler Co.

160

VENDING MACHINES—coin-operated. Series of leaflets describes and illustrates various models, products dispensed, change-making facilities. Stoner Mfg. Corp.

161

VENTILATING EQUIPMENT—duct-type fans. Descriptions, photographs, capacities, specifications, dimensions, weights of different types. L. J. Wing Mfg. Co.

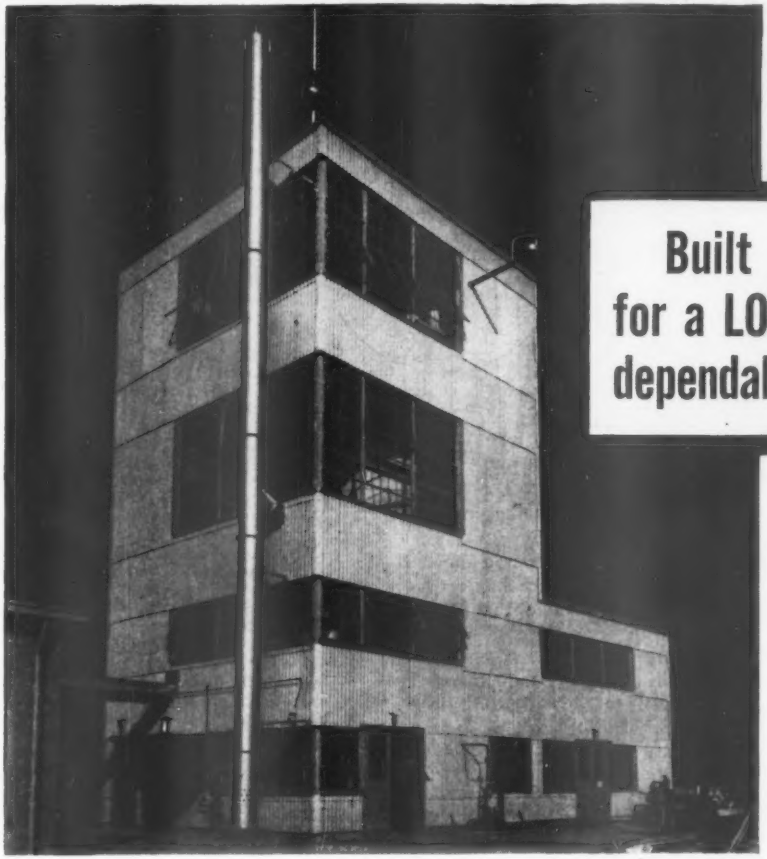
162

VENTILATORS—louvers, oil filters, exhaust heads, sheet metal specialties, equipment. Description, photographs of different sizes, types; applications of each. Engineering facilities. Burt Mfg. Co.

163

VENTILATORS—axial-flow. Types, fans, accessories. Photographs, sketches, diagrams. Methods of mounting, specifications, tables of capacities, dimensions; how to select right size. Cat. DV-2-46, 20 pp. De-

• *New pilot plant of Pittsburgh Consolidation Coal Company at Library, Pa., sided with "Century" Asbestos Corrugated. Construction by Chemical Plants Division of Blaw-Knox Company, Contractors.*



Built for a LONG life of dependable service

K&M "Century" ASBESTOS CORRUGATED

Nature made Asbestos . . .
Keasbey & Mattison has made it serve mankind since 1873

This large pilot plant of the Pittsburgh Consolidation Coal Company is the latest unit in one of the most modern research laboratories of its kind. The new building is designed and equipped for the study and development of more efficient coal gasification processes.

It is fitting that the fine equipment of this pilot plant should be housed in a modern building sided with good-looking, long-lasting K&M "Century" Asbestos Corrugated. This time-proved material is noted for great structural strength and ability to withstand severe commercial usage. It resists fire, weather, rot, rust and galvanic action. And no protective painting or upkeep is needed.

"Century" Asbestos Corrugated is easy to cut with a portable electric or band saw . . . easy to drill . . . easy and *fast* to apply, for it comes in 24 different sheet lengths. Can be re-used even after many years of service.

Write for name of nearest distributor and further particulars. Your inquiry will receive prompt attention.

K&M best in asbestos ®

KEASBEY & MATTISON
COMPANY • AMBLER • PENNSYLVANIA

INCREASE EFFICIENCY AND LOWER YOUR COSTS—

—with an A-F Engineered Conveyor System

TWIN LIVE ROLLER Conveyors—merging at one operation point—now move heavy castings through this mid-western plant faster and more economically! And because aisle space has been used more efficiently, greater production has been achieved with no increase in floor space.

Your plant undoubtedly requires an entirely different materials-handling and products-handling installation—and yet, the installation pictured above offers graphic proof of the superiority of A-F Conveyor Engineering.

Why Be Satisfied With Less?

Write, without obligation on your part, for a frank discussion with A-F Engineers regarding the latest improvements in the handling of materials and products by means of A-F *Engineered* Completely Co-ordinated Conveying Systems. Address Dept. W.I.

Offices or Representatives in Principal Cities—Coast to Coast

THE ALVEY-FERGUSON COMPANY

134 Disney Street *Established 1901* Cincinnati 9, Ohio

CONVEYING EQUIPMENT

Alvey-Ferguson

METAL PRODUCTS CLEANING EQUIPMENT

Bothezat Fans Div., American Machine & Metals, Inc.

164

VENTILATORS—continuous ridge, gravity ball-bearing revolving; fans; wall louvres; dampers, controls; accessories. Photographs, diagrams, performance and dimension data; mounting instructions. The Burt Mfg. Co.

165

VENTILATORS, ROOF — called Power-Flow. 12-page Cat. DP-3-48. Characteristics, construction details, dimensional drawings, photographs. Capacity tables, selection instructions. DeBothezat Fans Div., American Machine & Metals, Inc.

166

VIBRATION CONTROL—Cat. G-101, 4 pp. Types of spring, rubber-mounted, cork, cork and rubber equipment, isolation selector chart, typical specifications. The Korfund Co., Inc.

167

WALLS, CEILINGS, FLOORS—unit construction with Transite wall panels, acoustical and asphalt tile. Illustrations of different installations. Johns-Manville.

168

WALLS, PANELS — prefabricated insulated steel. Cat. B-47-B, 16-pp. Thermal properties, heat transmission coefficients, diagrams of typical construction details, photographs. The R. C. Mahon Co.

169

WATER COOLERS—electric. Bottle and bubbler types; photographs, description of different models. Fedders-Quigan Corp.

170

WATER COOLERS — Bottle and pressure-types. Various models, features, component parts. Sketches, photographs, capacities. Frigidaire Div., General Motors Corp.

171

WATER COOLERS—3-gal. bottle type. Models, specifications, ratings, capacities. Temprite Products Corp.

172

WATER COOLERS—Series of leaflets on different types, capacities, models, features. Westinghouse Electric Corp., Electric Appliance Div.

173

WAX—quick-drying, self-polishing, water emulsion type. Characteristics, features, application instructions. The Diversey Corp.

174

WELDING CONTROL — automatic start-stop d.c. Characteristics, operating features, specifications, ordering information. DV Welding Controls.

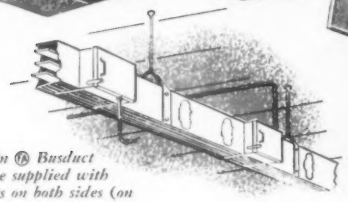
175

WELDING RINGS—groove type, with knock-off spacer pins. Photographs of step-by-step procedure in use; table of dimensions, weights, prices. Tube Turns, Inc.

176

WELLS, PUMPS—and equipment.

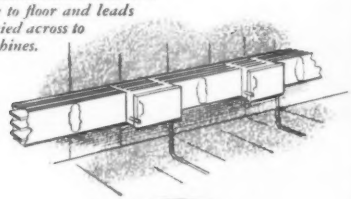
From any ANGLE . . .



Plugin Ⓕ Busduct can be supplied with outlets on both sides (on special order) for ceiling installations, as sketched above . . .

Or, if overhead conditions prevent suspending Plugin Ⓕ Busduct from ceiling, special wall-mounting brackets are available . . .

Or, as sketched from actual photograph, Plugin Ⓕ Busduct can be mounted close to floor and leads carried across to machines.



IT'S . . . PLUGIN Ⓕ BUSDUCT

Take the economy angle! Plugin Ⓕ Busduct permits a quick change in plant or electrical layout *without* disrupting production . . . eliminates costly temporary connections and expensive, long lead-ins . . . and greatly reduces maintenance costs and voltage losses.

Take the flexibility angle! Plugin Ⓕ Busduct provides a ready power source for new and present equipment anywhere along the line . . . *a plugin outlet* every foot of the way. Available in standard 10-foot lengths, Ⓕ Busduct can be installed on, or hung from ceilings, along walls, and even above baseboards . . . through tunnels under streets, through roofs or walls . . . and with dustproof or raintite protection.

Take the efficiency angle! Plugin Ⓕ Busduct saves much needed time in the installation and relocation of machinery and in day-to-day maintenance of the electrical system.

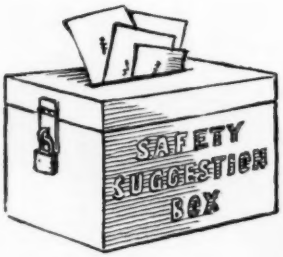
For more information see your Ⓕ Representative (he's listed in Sweet's) or write for Busduct Bulletin No. 701.

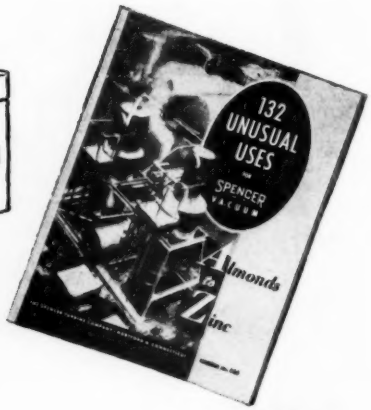
You'll agree that Plugin Ⓕ Busduct is the Most Economical Path From Power Source to Equipment.

Frank Adam Electric Co.

ST. LOUIS 13, MISSOURI

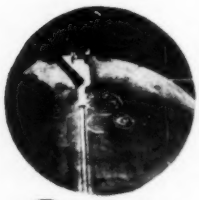
Makers of BUSDUCT • PANELBOARDS • SWITCHBOARDS • SERVICE EQUIPMENT • SAFETY SWITCHES • LOAD CENTERS • QUIKHETER





132 NEW IDEAS WITH SAFETY AS AN EXTRA DIVIDEND!

Here is a book full of ideas for accomplishing difficult production tasks with great speed, accuracy, and reduced costs, and yet every one of the suggestions might well be dropped into the Safety Suggestion Box.



Recovering Welding Flux

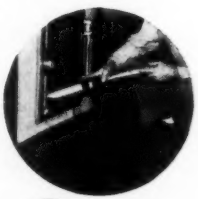
For instance, Spencer Vacuum handles hot materials such as ashes and cinders, and cleans out the bottoms of 30 foot car wheel pits while still hot.

Chemicals

Conveying of chemicals, foods, silica sand and other materials by the ton, is accomplished without scattering dust.

Fumes from autos in repair shops, from welding operations and in chemical plants, are collected at their source.

Rock drills used in quarries or for concrete are provided with a hood connected to Spencer Vacuum.



Removing Cocoa Shells

And, with the same Spencer Equipment, floors, walls, ceilings, pipes and all machinery can be kept clean.

ASK FOR THE SPENCER BULLETIN

356-D

SPENCER HARTFORD VACUUM CLEANING

THE SPENCER TURBINE COMPANY, HARTFORD 6, CONN.

Well water systems, W.S. Bul. 6-40, 32 pp. Descriptions, pictures, diagrams of different types, with suitable pumps. Photographs of installations. Layne & Bowler, Inc.

177

WHEELS, POINTS—mounted abrasive. Uses, speeds, standard specifications, construction details. Drawings of different types, shapes, sizes; price list. Form ESA-67, 16 pp. Simonds Abrasive Co.

178

WINDOWS, METAL—doors, screens, storm windows. **178(a)** Horizontally pivoted projected windows, Bul. 1007, 8-pp. Types, sizes, structural detail drawings; installation data; combination table. **178(b)** Bul. 1001D, 36 pp., metal windows and doors. Descriptions, photographs, specifications, dimensions of different types; suitable hardware. Installation detail drawings, light and vent area tables. **178(c)** Metal screens and storm windows, Bul. 2001B, 12-pp. Specifications, dimensions, elevation drawings, construction diagrams of different types. Ceco Steel Products Corp.

179

WINDOWS, STEEL — Photographs, sketches of different types; dimensions, cross-section detail drawings. Detroit Steel Products Co.

180

WIRE—122-pp. Cat. 45 on line of wires and cables. Description of manufacturing processes, different products. Photographs, specifications, dimensions. Crescent Insulated Wire & Cable Co.

181

WIRE, CABLE—insulated, for building construction, for wiring machines, controls, lights, communication equipment. Different types, applications, technical data. Crescent Insulated Wire & Cable Co.

182

WIRING DEVICES—182(a) Indexed Bul. 1022, on outlet and switch boxes, conduit fittings. Pictorial index, features, specifications, photographs, sketches. **182(b)** Threaded and no-thread malleable and explosion-proof fittings, called Unilets. Bul. 1026, 68-pp. Features, photographs, specifications, dimensions of different types; index and price list. **182(c)** Cat. 11, complete revised information on threaded, no-thread malleable, explosion-proof, dust-tight "Unilets." Same information as above. Appleton Electric Co.

183

WOOD CONNECTORS — framing anchors, termite shields. "Modern Building With Wood," 40-page booklet. Photographs, descriptions of different applications; report of research activities. Timber Engineering Co.

A safe ladder guard made of

WHEELING EXPANDED METAL

"Material of a thousand uses"

Wheeling

YOU'RE looking from the ground up at only one of the thousands of interesting uses of Wheeling Expanded Metal.

Perfect for ladder, window, machine and skylight guards. Also as a partition, "ExM" admits light and air yet prevents intrusion. Wonderful for teller cages, grilles, storage racks, industrial trays and baskets.

Heavy types make non-slip stair treads and catwalks, for "ExM" comes in a wide variety of weights and mesh sizes . . . also painted and coated.

You should have complete information about it on file. Write:

WHEELING CORRUGATING COMPANY

WHEELING, WEST VIRGINIA

ATLANTA · BOSTON · BUFFALO · CHICAGO · CLEVELAND · COLUMBUS · DETROIT · KANSAS CITY
LOUISVILLE · MINNEAPOLIS · NEW ORLEANS · NEW YORK · PHILADELPHIA · PITTSBURGH · RICHMOND · ST. LOUIS

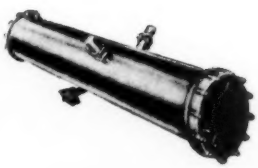
WESTINGHOUSE ANNOUNCES THE NEW ALL-ALUMINUM PRECIPITRON*... MOST EFFICIENT AIR CLEANER EVER BUILT

Now PRECIPITRON is more effective than ever!* Introduced more than ten years ago by Westinghouse, PRECIPITRON*, the electronic air cleaner, has opened important new avenues of cost reduction for business and industry. For only the PRECIPITRON* principle eliminates up to 90% of all airborne dirt, smoke, dust, soot and industrial oil mists, compared to the 10% to 20% efficiencies of ordinary mechanical filters.

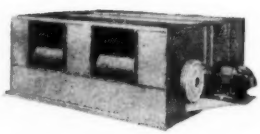
The new, all-aluminum PRECIPITRON* cell now offers more advantages that mean additional savings—

1. **25% More Plate Area Per Cell.** Means lower costs for cleaning a given volume of air. For, each PRECIPITRON* Dust Collector Cell has 25% more collection area than before. This permits more compact installation with resultant savings in space and equipment.
2. **All-Aluminum Construction.** Means lower maintenance and installation costs. For, as the only electronic air

*Reg. U. S. Pat. Off

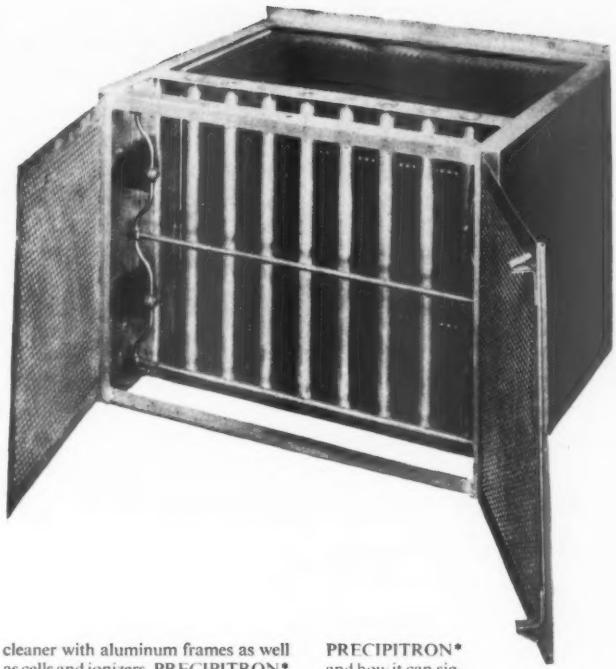


REFRIGERATION CONDENSERS



AIR HANDLING UNITS

UNIT HEATERS



25% MORE PLATE AREA per cell

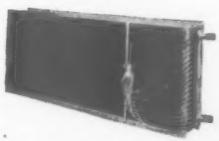
cleaner with aluminum frames as well as cells and ionizers, PRECIPITRON* has an exceptionally high resistance to corrosion and rust—needs no protective coating. And, there's not a single part—with exception of power pack—which cannot be handled by one man without auxiliary lifting devices. Heaviest piece weighs only 50 lbs. So, PRECIPITRON* is assembled quickly, easily—with resultant savings in labor costs.

For more information on this new PRECIPITRON* and how it can significantly cut dirt-caused losses in *your* business or industrial operations, call your nearest Westinghouse office. Or, write to Westinghouse Electric Corporation, Sturtevant Division, Hyde Park, Boston 36, Massachusetts.

Westinghouse
Sturtevant Division

REFRIGERATION COMPRESSORS

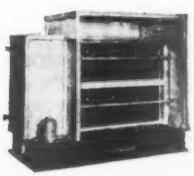
AXIAL FLOW FANS



HEATING AND COOLING COILS

CENTRIFUGAL FANS

Unit AIR CONDITIONERS



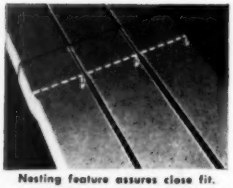
SURFACE DEHUMIDIFIERS

Everything that puts air to work for Every application

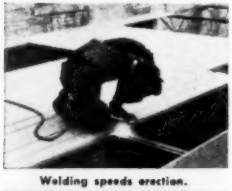
J-80134

Available in lengths up to 163' for all standard multiple purlin spacings; 1¼" rib in 18 gauge, 1½" rib in 18 and 20 gauge; Tight-coat galvanized, or copper alloy steel (with prime coat).
• EASY TO ERECT
• STRONG
• ECONOMICAL

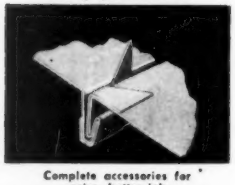
You save three ways by using Milcor Steel Roof Deck



Nesting feature assures close fit.



Welding speeds erection.



Complete accessories for easier, better job.

A perfect base to increase life of insulation and covering.

When you build with Milcor Steel Roof Deck, you save from beginning to end.

And that means you save from the initial construction right through the many years of service you get from this permanent, fireproof roof.

1. **You save on construction of the building.** The light weight of Milcor Roof Deck helps you avoid the cost of heavy superstructure.
2. **You save on erection of the roof itself.** Interlocking sides and overlapping ends (with ribs offset for easy nesting) speed installation. Sheets may be welded, or anchored with clips.
3. **You save throughout the life of the building.** Milcor Roof Deck gives you the durability, and fire-resistance of steel. That's strong assurance that you are free from maintenance and replacement expense for years to come.

Let our engineers work out suggestions and layouts to meet your special needs.

INLAND STEEL PRODUCTS COMPANY

FORMERLY MILCOR STEEL COMPANY

MILWAUKEE 1, WISCONSIN

Baltimore 24, Md. • Buffalo 11, N. Y. • Chicago 9, Ill. Cincinnati 25, Ohio • Cleveland 14, Ohio • Detroit 2, Mich. • Kansas City 8, Mo. • Los Angeles 23, Calif. New York 22, N. Y. • Rochester 9, N. Y. • St. Louis 10, Mo

F326

For complete details

Tear out this coupon and mail today!

Inland Steel Products Company,
Milwaukee 1, Wisconsin

Please send me your Milcor Steel Roof Deck Bulletin with complete details.

Name ..... Position .....

Company .....

Company Address .....

City ..... ( ) State .....

REDUCE COSTLY TANK MAINTENANCE AND OUT-OF-SERVICE TIME DUE TO INTERIOR RUST AND CORROSION

Cathodic Protection—either alone or in conjunction with paint—is modern, effective and economical. Electro Rust-Proofing offers the technical skill and experience of thousands of installations to give practical answers to your problems. Write today, without obligation, for detailed information.

E-12

ELECTRO RUST-PROOFING CORPORATION (N.J.)

BELLEVILLE 9, NEW JERSEY

REPRESENTED IN PRINCIPAL CITIES

MULLER MIXER

TRADE MARK

HALF-BAG CONCRETE MIXERS

•

6½ CU. FT.

CONCRETE BUGGIES

•

MILL SUPPLY DEALERS:

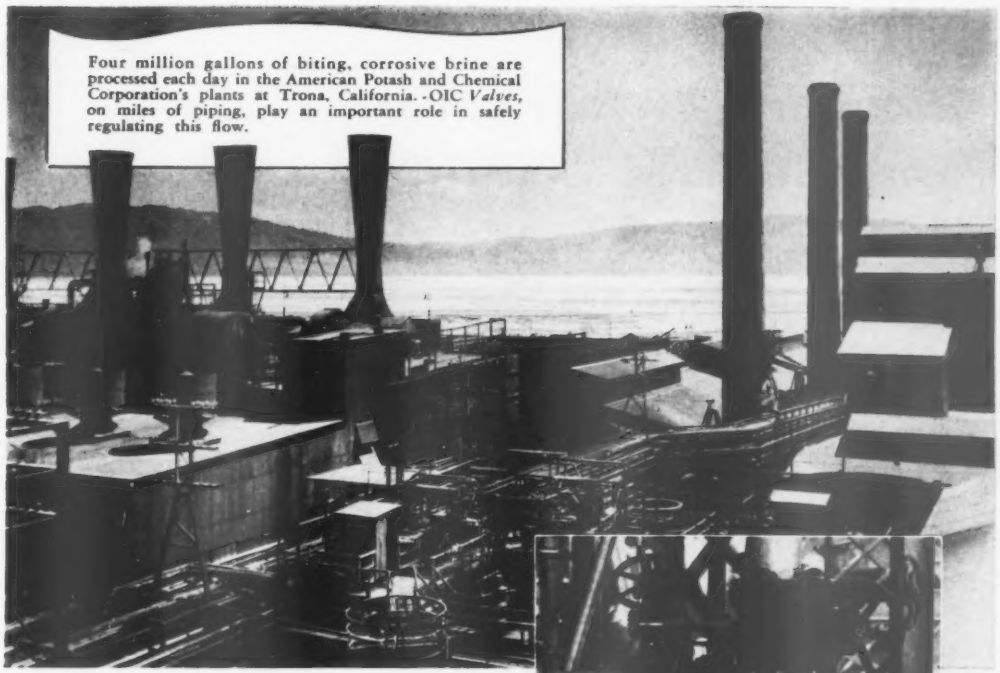
Send for complete information on these products — ideal for factory maintenance.

•

Write for Literature

MULLER MACHINERY CO., INC.

METUCHEN, NEW JERSEY



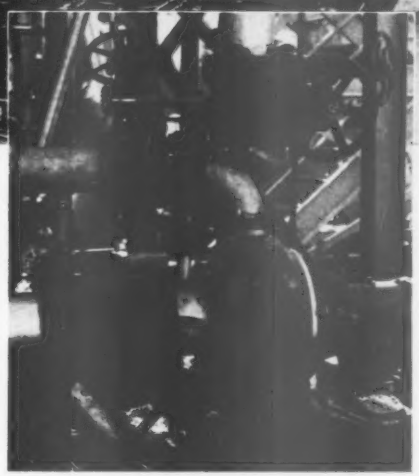
Four million gallons of biting, corrosive brine are processed each day in the American Potash and Chemical Corporation's plants at Trona, California. - OIC *Valves*, on miles of piping, play an important role in safely regulating this flow.

First in Importance . . . THE *RIGHT TRIM!*

YOU can cut your valve operating costs to a new low by installing OIC Valves. Every OIC Valve is especially made for its particular job. And the right trim for the job means less wear and longer service with less maintenance. Then, too, all trim surfaces in OIC Valves are finished to a highly polished smoothness — shaving friction to the lowest possible coefficient.

Like American Potash, you'll find that OIC *makes a valve to fill your specific requirements.*

If you'd like to discuss your valve problems with valve experts, see your OIC Distributor, or write direct to OIC.



OIC **Valves** on the job. Month after month, they give steady, dependable service under gruelling conditions.

SAY GOODBYE TO YOUR CHANGE-OVER PROBLEMS!

Changing over is easy with OIC's handy Cross Reference Chart. Simply check the number of the valve on your lines, look in the chart, and you'll find the number of the right OIC Valve for the job. For your free copy, write to The Ohio Injector Company, Wadsworth, Ohio. 0-449-14

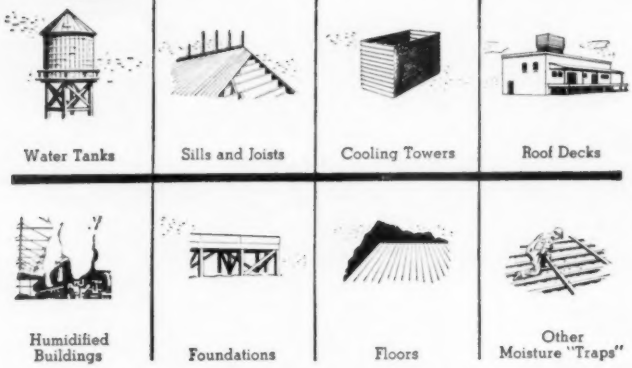
OIC
PACE-SETTER
IN VALVES

STEEL • IRON • BRONZE

Where Wood Needs Protection from DECAY and TERMITES

WOLMANIZED PRESSURE TREATED **LUMBER**

. . . lasts 3 to 5 times longer



Water Tanks | Sills and Joists | Cooling Towers | Roof Decks

Humidified Buildings | Foundations | Floors | Other Moisture "Traps"

Here are six common conditions where WOLMANIZED Pressure-Treated Lumber provides protection from decay and termites:

1. Where excessive ground moisture, rain or thaws cause early decay failures.
2. Where wood near the ground is open to termite attacks.
3. Where wood is in contact with damp concrete or masonry.
4. Where steam and vapor from industrial processes promote wood decay.
5. Where walls, floors, ceilings are subject to condensation from refrigeration.
6. Where wood is exposed to moisture in artificially humidified buildings.

Investigations by qualified technologists prove that on installations where decay and termites ordinarily shorten lumber life, WOLMANIZED Pressure-Treated Lumber lasts *Three to Five Times Longer* than untreated wood.

Such lasting protection is assured because penetrating, preservative solutions are forced, by vacuum-pressure treatment, deeply into the wood fibers of WOLMANIZED Lumber. And, WOLMANIZED Lumber is clean, odorless, paintable, non-corrosive, non-leaching and glueable. Only WOLMANIZED Lumber offers *all* these extra advantages.

YOU'LL PROFIT BY GETTING THIS INFORMATIVE BOOKLET

Get all the facts and cost-saving figures on WOLMANIZED Lumber. See why it offers you the best protection available against wood decay and termites. Write for this valuable booklet today.

AMERICAN LUMBER & TREATING COMPANY

General Offices: 332 South Michigan Avenue, Chicago 4, Illinois

Branch Offices: Baltimore, Boston, Jacksonville, Fla., Los Angeles, New York, Philadelphia Portland, Ore., San Francisco, Washington, D. C.

AIR CONDITIONING UNITS
VERTICAL TYPE UNIT HEATERS
CABINET TYPE UNIT HEATERS
In Every Case... SPECIFY
YOUNG
SPECIALISTS IN HEATING, COOLING AND AIR CONDITIONING EQUIPMENT FOR HOME AND INDUSTRY
CONVECTORS
HEATING AND COOLING COILS
HORIZONTAL TYPE UNIT HEATERS
BLOWER TYPE UNIT HEATERS

YOUNG

HEAT TRANSFER PRODUCTS

HEATING, COOLING AND AIR CONDITIONING PRODUCTS
Convectors • Unit heaters • Heating coils • Cooling coils • Air conditioning units • Evaporative condensers

AUTOMOTIVE PRODUCTS
Gas, gasoline, Diesel engine cooling radiators • Heat exchangers • Intercoolers • Oil coolers • Supercharger intercoolers

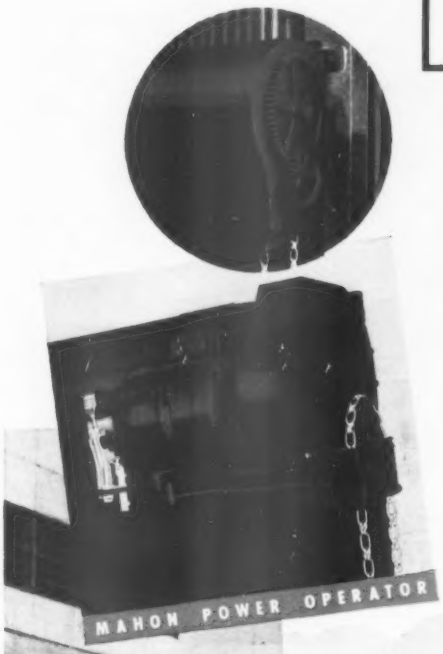
OIL FIELD, HEAVY INDUSTRIAL, MUNICIPAL & CHEMICAL PROCESS COOLING EQUIPMENT
Engine jacket water coolers • Oil coolers • Steam and natural gas condensers • Natural gas coolers • Evaporative coolers and condensers • "VAD" Vertical air discharge cooling and condensing units.

AERONAUTICAL PRODUCTS
Oil coolers • Supercharger intercoolers • Radiators • Heat exchangers • Valves • Regenerators

YOUNG RADIATOR CO.

General Offices: Dept. 809-D, Racine, Wisconsin
Plants at Racine, Wisconsin, and Mattoon, Illinois
Sales and Engineering Offices in All Principal Cities

Rolling Steel DOORS



Manually • Mechanically • Power Operated

No door offers the inherent advantages of a good Rolling Steel Door . . . no other type of door offers the permanence of all-steel construction, the saving in space adjacent to door openings—and, most important, the satisfaction born of a lifetime of trouble-free door performance. These advantages are realized to the fullest degree in Mahon Rolling Steel Doors . . . comparison of details of construction and materials employed at critical points will reveal a greater door value . . . exclusive Mahon features will be found very desirable from an everyday operating standpoint. See Mahon's Insert in Sweet's Files for complete information, details and specifications.

THE R. C. MAHON COMPANY

Detroit 11, Michigan • Western Sales Division, Chicago 4, Illinois

Representatives in All Principal Cities

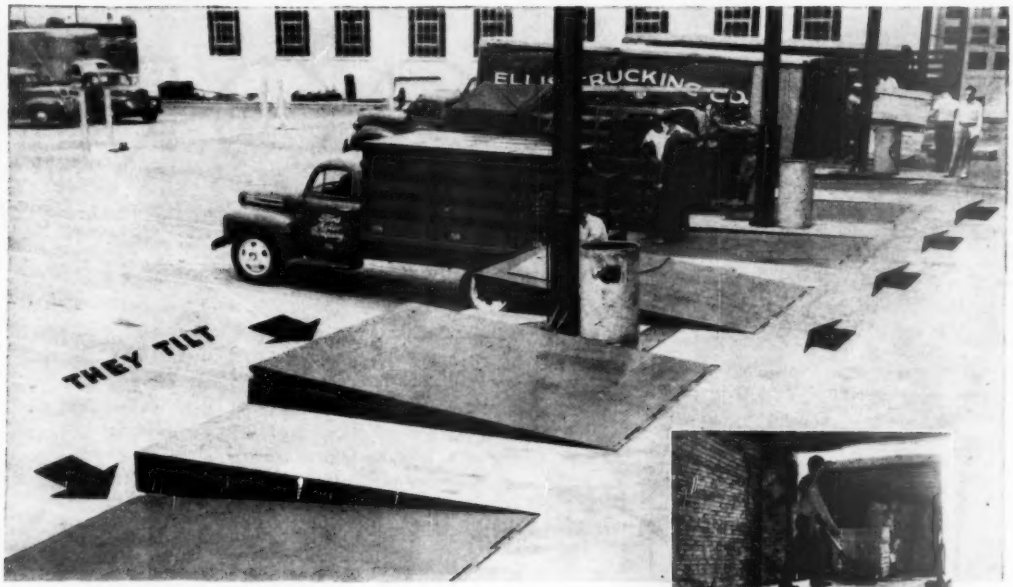
Manufacturers of Rolling Steel Doors, Shutters and Grilles, and Mahon Steel Deck for Roofs, Sidewalls, Partitions, Acoustical Ceilings, Permanent Floor Forms and Oversize Doors.

ROLLING STEEL DOORS, SHUTTERS AND GRILLES TO MEET EVERY REQUIREMENT

Seventy Five Mahon Rolling Steel Doors are installed in the new building illustrated above, which was built by Spence Bros., Gen. Contrs. Saginaw, Mich., for a large midwestern Foundry Company.

MAHON

"LOADING TIME CUT IN HALF"



Tilting Loading Dock Ramps Tilt to Meet Truck Body. Operated by Hydraulic Lifts.

Standard Wayne Platform Lift Itself Becomes Loading Dock.

Cut Costs

WITH WAYNE LOADING DOCK LIFTS

YOU CAN save time and money with Wayne Hydraulic Leveling Ramps to adjust the level of the loading dock to the truck height. Material on skids can be directly transported into the truck body over a level path. A variance of as much as 20 inches in the height of truck bodies may be instantly adjusted by merely turning a valve. Users say: "Cuts loading time in half." .. "As good as doubling dock facilities."

SEND FOR ILLUSTRATED FOLDER

Use the coupon below to get all the facts on this new plan to cut costs at the loading dock. No obligation.

THE WAYNE PUMP COMPANY, FORT WAYNE 4, INDIANA
521 Tecumseh Street

Please send folder on time-saving Wayne Loading Dock Lifts and give us some idea of the cost.

NAME _____

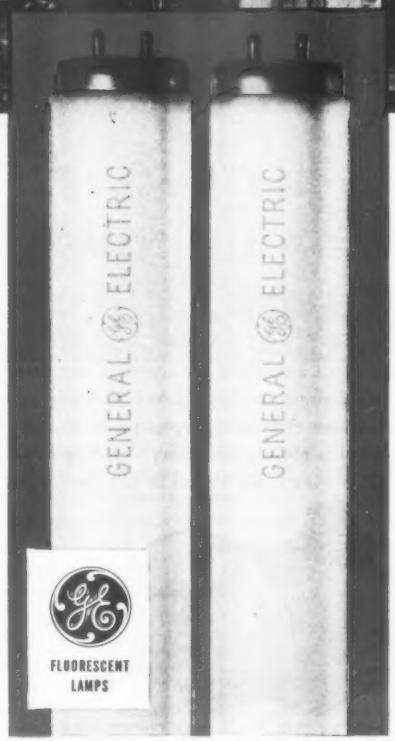
ADDRESS _____

CITY _____ STATE _____

for your protection

NATIONWIDE SERVICE

INDUSTRIAL AIR COMPRESSORS • HOSE REELS • BULK PUMPS • POWER WASHERS



Pattern for modern lighting

—and more profits!

Easy, comfortable seeing in this assembly shop results in faster, more accurate work, improved employee morale. Fluorescent fixtures arranged in a grid pattern, with two 40-watt General Electric fluorescent lamps in each fixture, give 80 footcandles of illumination on the work areas, cut shadows to a minimum.

Modern, improved lighting like this, made possible with General Electric fluorescent lamps, is a sound investment that pays off in increased production and profits.

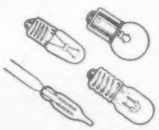
See your General Electric lamp supplier today. Always specify G-E fluorescent lamps for all replacements or new installations. Quality is assured by more than 480 tests and inspections!

You can put your confidence in—

GENERAL ELECTRIC

Whatever Lamps you need

FILAMENT
All types and wattages for every lighting need.



INDICATOR
Glow and filament types, for instrument panels, etc.

REFLECTOR
Spot and flood types. Self-contained reflector.

INFRA-RED
For drying, baking, curing and other heat processes.

-G-E makes 'em all

Noralyn Phosphate Mine of International Minerals and Chemical Corporation, near Bartow, Florida. Reynolds *Lifetime* Aluminum Industrial Corrugated roofing and siding used on conveyor, tower and processing building. Installed by Guarantee Waterproofing Co., Atlanta, Georgia.

FLORIDA'S LARGEST PHOSPHATE MINE USES REYNOLDS *Lifetime* ALUMINUM INDUSTRIAL CORRUGATED

"ALUMINUM makes the best roofing and siding," says International Minerals and Chemical Corporation.

Reynolds .032" thick, extra-deep Corrugated has exceptional strength, is rust-proof and corrosion-resistant. Protective painting not necessary. Maintenance practically nil. In addition, aluminum's radiant heat reflectivity keeps interiors cooler in summer, more economical to heat in winter. Easy to apply over any purlin. Reynolds also manufactures all accessories for complete installations.

Reynolds engineers will gladly work with you on any new construction or building repair problems. Call on them. **Reynolds Metals Company,** Building Products Division, Louisville 1, Ky. Offices in 32 principal cities.

Reynolds Metals Company
Building Products Division
2008 So. Ninth St., Louisville 1, Ky.

Please send full information on:

- ☐ Reynolds Industrial Corrugated
- ☐ Reynolds Alumi-Drome

Company_____

Address_____

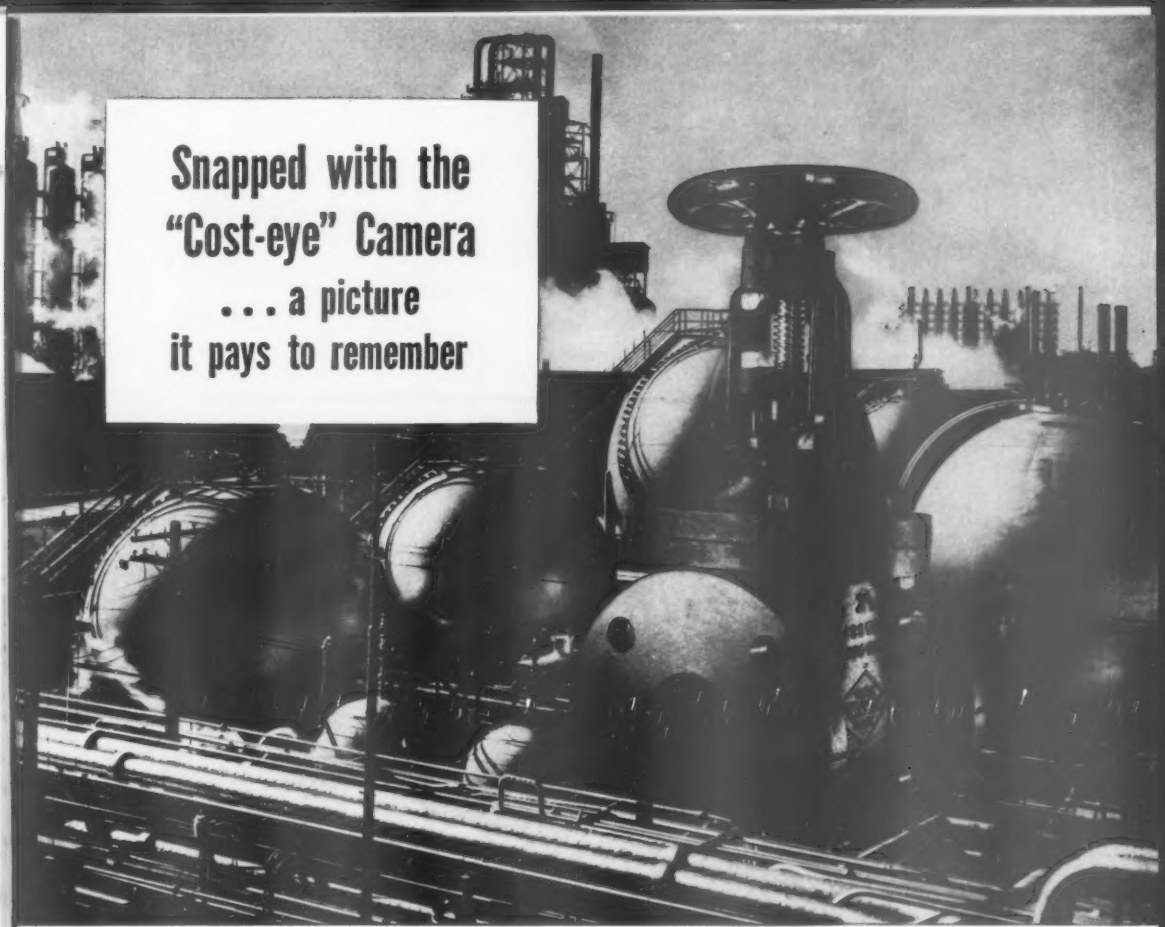
Your Name & Title_____

REYNOLDS "ALUMI-DROME" all-purpose prefab!

IF YOU SEE RUST YOU KNOW IT'S NOT ALUMINUM — REYNOLDS *Lifetime* ALUMINUM BUILDING PRODUCTS

All aluminum. Patented all-bolt construction. Basic unit 36' x 60', length variable by 6' sections. Wide choice of door and window arrangements.

WORLD'S LARGEST PRODUCER OF ALUMINUM BUILDING PRODUCTS



Snapped with the "Cost-eye" Camera . . . a picture it pays to remember

IF A CAMERA could be constructed with an eye to costs, this is the picture you'd get of a synthetic rubber plant. By showing *all valves* as *one valve* it brings into proper perspective the valve investment in *any* plant, *any* large building where operation involves fluid control. Collectively, valves represent a major expenditure . . . yet too often, they are selected with "petty cash" consideration.

IT WILL PAY MANAGEMENT to keep this picture in mind. With wages and material costs the highest ever, valve maintenance costs must be watched as carefully as operating expense of larger plant units.

EXCESSIVE MAINTENANCE of one inferior valve is insignificant, but multiplied by thousands, it is a serious drain on operating budgets.

JENKINS BROS. helps you meet this problem two ways. First, by building extra endurance into Jenkins Valves, making them the longest-lasting, lowest-upkeep valves that money can buy. Second, with advice from Jenkins Engineers on any question of proper selection, installation, inspection or maintenance.

For all new installations, for all replacements, rely on Jenkins quality and engineering for lowest valve costs in the long run. *Sold through leading Industrial Distributors everywhere.*

•

Jenkins Bros., 80 White St., New York 13; Bridgeport, Conn.; Atlanta; Boston; Philadelphia; Chicago; San Francisco. Jenkins Bros., Ltd., Montreal.

"PREVENT VALVE FAILURE" is a 28-page guide to valve economy, fully illustrated, with case histories of valve damage, and recommendations for its prevention by proper selection, installation, inspection, and maintenance. FREE on request. Write: JENKINS BROS., 80 White St., New York 13, N. Y.

LOOK FOR THIS JENKINS DIAMOND MARK

SINCE 1864

JENKINS VALVES

Types, Sizes, Pressures, Metals for Every Need

5 Wiring Ideas ...TO BRIGHTEN YOUR PLANS

A specific wiring material for a specific job—that's the new idea in planning for a productive, profitable drafting room. To help you make the right choices every step of the way—we've picked five tailor-made ideas right off your General Electric distributor's shelves. Look them over for real help in your planning job.

1. UNDERFLOOR WIRING is the ideal system for this kind of equipment. G-E Fiberduct raceways or Q-Floor Wiring provide for outlets in the floor practically anywhere, any time they're needed. As room arrangement is changed—as desks are moved—as electrical appliances are added—outlets can be moved or added, too, in a matter of minutes. For a drafting room that keeps pace with the times, give it flexibility with G-E Fiberduct or Q-Floor Wiring.

2. MERCURY SWITCHES are General Electric's silent switches you've heard so much about. They're made for spots where people constantly flip lights ON and OFF. After years of operation, they keep on doing their job well. A pool of mercury flows from the open to closed position silently—with no apparent friction or wear. G-E mercury switches fit wherever standard switches fit—carry a full 10-ampere rating.

*Trademark Reg. U. S. Pat. Off.

3. TYPE TW WIRE. Here's another good bet for the installation that's going to stay modern in the years ahead. Small-diameter, long-life General Electric Type TW wire conserves space in conduit—leaves room for additional wiring later on, without additional raceways. This smooth, thermoplastic wire is an installation-timesaver, too, because it pulls through conduit easily—makes cutting and stripping a fast operation.

4. CONDUIT, of course, should be General Electric White—the rigid conduit that's hot-dip galvanized to stand up through the years. Wherever installation plans call for long life and low maintenance costs, specify G-E White.

5. HEAT-RESISTANT Deltabeston* fixture wires are a "must" in a location like this. Where lamps burn continuously, heat-beating Deltabeston wires are a wise precaution. Make sure they're part of every fixture you buy. And, to make your fluorescent installation complete, specify G-E Watch Dog* starters. They automatically cut out blinking lamps—keep lighting continuous and even.

Why not get the habit of looking to your General Electric distributor for ideas and advice—as well as for wiring materials? He has a full line of materials to choose from—and a wide range of experience he'll gladly share with you. Contact him for information—or write to Section K14-434, Construction Materials Department, General Electric Company, Bridgeport 2, Connecticut.

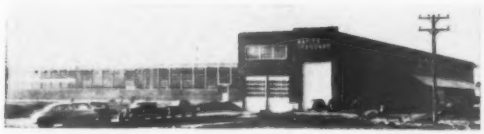
GENERAL ELECTRIC

WHY THESE NOTEWORTHY NEW BUILDINGS

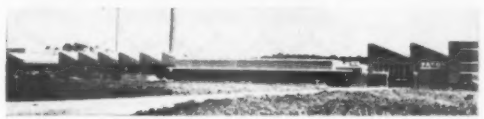
(erected in 1948 and featured in this issue)

USED *Fenestra* BUILDING PANELS

Stecker Paper Box Co., Detroit, Mich., with 372 squares of Holorib Roof Deck.



Rapids-Standard Co., Grand Rapids, Mich., using 573 squares of Holorib Roof Deck and 13 squares of C wall panels.



American Enka Co., Lowland, Tenn., with 713 squares of C wall panels, 95 squares of Holorib.

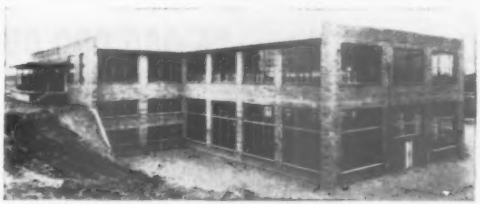
Western Electric Co., Inc., Allentown, Pa., using 1991 squares of Holorib Roof Deck.

You may need to get your plant up and going in a hurry. You may want strong fire-resistant construction. Perhaps economy is the most important factor.

These modern buildings got all three. They used a total of 4,202 squares (420,200 square feet) of Fenestra* Steel Building Panels.

Fenestra Panels are quickly laid and interlocked without special skills or special tools. Other work can start without delay . . . D Panels make a flat base on which to wheel in other materials. Insulated C Panel walls spring up quickly and Holorib Roof Deck completes the strong enclosure.

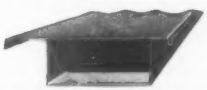
Mail the coupon for full information. *Trademark



Adelphian Academy, Holly, Mich., using 228 squares of Holorib Roof Deck, 217 squares of D panels for floors.

THESE NONCOMBUSTIBLE FENESTRA PANELS SPEED ALL TYPES OF CONSTRUCTION

TYPE C FOR WALLS. Two metal members pressed together, with felt at each side to prevent metal-to-metal contact. Filled with insulation and closed at the ends, at the factory. Standardized in 3″ depth and 16″ width, in 18 gage painted steel or 16 B & S gage aluminum.



TYPE D FOR FLOORS. Box beam formed by welding together two steel sections. Side laps interlock to form continuous flat surface. Standardized in 16″ width. Depth 1½″ to 9″. Gages 18 to 12. Type AD available with two flat surfaces.

HOLORIB ROOF DECK. Steel sheets reinforced by three integral triangular ribs on 6″ centers. Flat surface for mopped application of insulation and roofing. 18″ wide. Lengths to 24′ to fit. Gages 18 and 20 are standard.

Fenestra
BUILDING PANELS FOR
ROOFS
WALLS
FLOORS

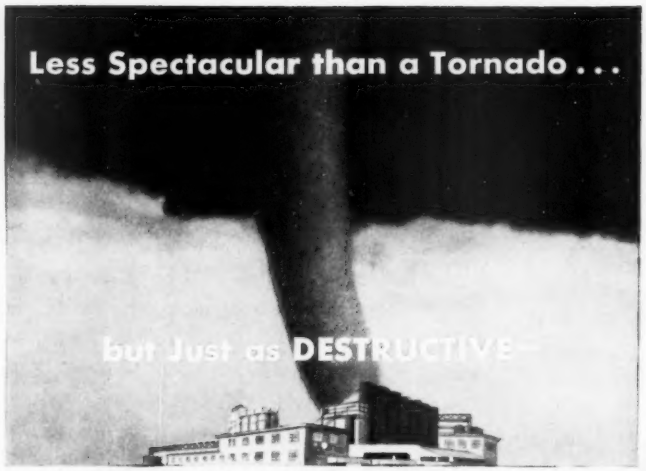
DETROIT STEEL PRODUCTS COMPANY
Building Panels Division
Dept. FM-4, 2266 E. Grand Boulevard
Detroit 11, Michigan

Please send me, without obligation, information on Fenestra Building Panels.

Name_____

Company_____

Address_____



RUST

Costs the Nation $6,000,000,000* Yearly!

Day and night—*twenty-four hours a day*—rust gnaws at your property. Not as dramatic as a tornado or other fear-inspiring disaster, rust costs you plenty in a year's time. You pay your full share of the nation's annual $6 billion loss from rust . . . unless you protect iron and steel surfaces against this *metal-consuming* menace.

RUST CAN BE STOPPED! Industry, railroads and public utilities find Rust-Oleum the best answer to their rust problems. It seals the surface so thoroughly that rust can't get started. Applied to iron and steel—even where rust has already begun—Rust-Oleum resists destructive conditions . . . rain, snow, dampness, salt air, heat, fumes and ordinary weathering.

*Estimated on the basis of 2% wastage of iron and steel due to rust.

• Get the Facts!

Stop this destruction. Metal replacement is costly! Save your property with Rust-Oleum. It gives lasting protection. Tell us your rust problems. We'll send you specific recommendations promptly. See our complete catalog in Sweet's, or write us today for your copy.

Rust-Oleum is available for immediate delivery through Industrial Distributors in all principal cities . . . who stock Rust-Oleum and other factory supplies for your convenience.

RUST-OLEUM CORPORATION
2437 Oakton Street, Evanston, Illinois

RUST-OLEUM *Stops Rust!*

Pittsburgh *Chain-Link* Fence

For complete protection of your property and equipment consult our chain-link fence experts. They will plan an economical installation and give you a free cost estimate. Write today!

PITTSBURGH STEEL COMPANY
GRANT BUILDING, PITTSBURGH 30, PA.

For a list of reprints of some of FACTORY's best recent articles on a variety of subjects on

• Production • Maintenance • and Labor •

SEE PAGE

2 3 5

(PART I)

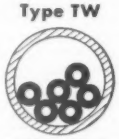
"WASTE NOT, WANT NOT." Here, truly, is a seasoned proverb for this age of universal electric power . . . made to order for modern, streamlined production that *demands* old-fashioned thrift. Ask your plant power engineer, consulting engineer, electrical contractor or utility power salesman about the extravagance of overloaded, overextended, obsolete, *inadequate* wiring . . . and the threat of slow-downs and shut-downs that hangs over your head.

½" CONDUIT

Type R

3 #10 Wires

Type TW



6 #10 Wires

Densheath Type TW Building Wire with its special thermoplastic insulation is sound production insurance in any plant. It will not support combustion, is long-aging, impervious to acids, oils and alkalis. It is recognized by the National Electrical Code for circuits up to 600 volts and temperatures up to 140° F. . . . and for wet and oily locations. Being light weight, with a smooth, slick finish and without braid, Densheath pulls through easier . . . resists abrasion. Permanent, bright colors for quick circuit identification. Write for literature.

This is important, too—*for rewiring in existing raceways*, the Code recognizes the smaller diameter of Densheath TW and permits more conductors to be pulled in the same size conduit. At left, a typical case—

*WIRE AHEAD . . . a comprehensive discussion of preventive maintenance, points out the symptoms of inadequate wiring, presents detailed plans for anticipating electrical demand. Forty-eight factual pages of practical information and suggestions free on request.

ANACONDA

ANACONDA WIRE & CABLE COMPANY

25 Broadway, New York 4, N. Y.

Ramps are only a few of the places where Ferrox should be used — *outside* your plant.

Your washroom is only one of the many places which require Ferrox — *within* your plant.

Accidents Involve People

. . . and they can involve you!

Do you know that slips and falls are responsible for about 20% of all compensation claims? And do you know how these can be greatly reduced?

Use non-slip Ferrox.* Wherever there's a slippery condition under foot, Ferrox can be quickly and easily trowelled-on . . . to prevent accidents under wet, dry, or oily conditions.

Ferrox was thoroughly tested and used by the Navy under the most rigorous conditions. In your plant, it may be applied to *any floor surface* — may be used in less than eight hours—and costs surprisingly little.

Why not take a walk through your plant and let your feet tell you exactly where you need Ferrox?

*Reg. U. S. Pat. Off.

Meanwhile, use the coupon below for complete information about low-cost, durable Ferrox.

FERROX

Made by

THE AMERICAN ABRASIVE METALS CO.

IRVINGTON, NEW JERSEY • MAKERS OF FERALUN

FMM-1-49

American Abrasive Metals Co.
460 Coit St., Irvington, N. J.

I'd like to see your illustrated Ferrox Catalog.

Name ..... Title .....

Company .....

Address ..... City ..... State .....

ATLAS FLOORMASTER

For FLOOR POLISHING

✓ *Sealed-in-Oil Lubrication*

✓ *Patented Drive Mechanism*

Exclusive patented construction features assure trouble-free operation . . . eliminate costly service follow-ups. Sizes to meet every need.

Attachments for carpet and rug cleaning.

Write for Folder FM 4

Write for name of Nearest Distributor

ATLAS FLOOR SURFACING MACHINERY CORP.

248 East 34th Street New York 16, N. Y.

MAILING LISTS THAT WORK . . .

McGraw-Hill Industrial Mailing Lists are a direct route to today's purchase-controlling executives and technicians in practically every major industry.

These names are of particular value now when most manufacturers are experiencing constantly increasing difficulty in maintaining their own lists.

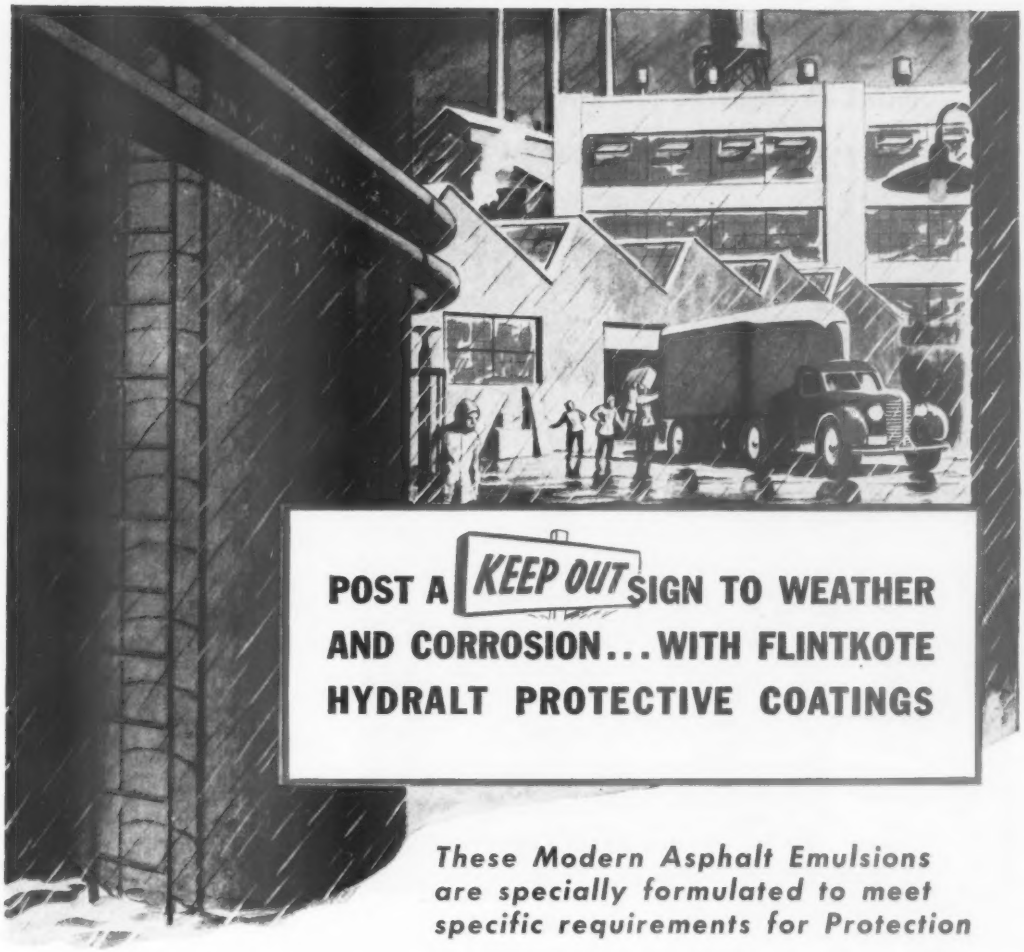
Probably no other organization is as well equipped as McGraw-Hill to solve the complicated problem of list maintenance during this period of unparalleled changes in industrial personnel. These lists are compiled from exclusive sources, based on hundreds of thousands of mail questionnaires and the reports of a nation-wide field staff, and are maintained on a twenty-four hour basis.

Investigate their tremendous possibilities in relation to your own product or service. Your specifications are our guide in recommending the particular McGraw-Hill lists that best cover your market. When planning your industrial advertising and sales promotional activities, ask for more facts or, better still, write today. No obligation, of course.

McGraw-Hill Publishing Co., Inc.

DIRECT MAIL DIVISION

330 West 42nd Street New York, 18, N. Y.



POST A KEEP OUT SIGN TO WEATHER AND CORROSION... WITH FLINTKOTE HYDRALT PROTECTIVE COATINGS

These Modern Asphalt Emulsions are specially formulated to meet specific requirements for Protection

EVERY tank, insulated pipe, refrigeration or wall coating job has its problems. And there's a Hydralt* Emulsion to solve most of yours. For *versatility* is an outstanding Hydralt characteristic.

Durability is another trait of Hydralt coatings. Exceptional durability. The same qualities that keep this coating stable under heat and prevent cracking at low temperatures, also render Hydralt highly resistant to weather. Test panels with more than 20 years exposure show Hydralt still doing its job.

Why is Hydralt so superior? Because the mineral colloid type *emulsion* creates a protective film reinforced within itself. It will outlast any other form of bituminous coating exposed to weather.

Emulsification brings other advantages. Hydralt requires no heating. It's completely fire-safe and nontoxic to apply. And the coating will not craze or alligator.

Hydralt Protective Coatings come in consistencies for spray, brush or trowel application . . . depending on the job to be done.

And, when you want to brighten up, use Flintkote Aluminum Paint. It's especially designed for use over asphalt. You get light, bright, attractive color . . . plus light and heat reflectivity.

Get complete information on these superior protective coatings that can do so many jobs for you. Write us today. We'll rush you detailed data sheets. *T. M. Reg. U. S. Pat. Off.

THE FLINTKOTE COMPANY
Industrial Products Division
30 Rockefeller Plaza, New York 20, N.Y.
ATLANTA • BOSTON • CHICAGO HEIGHTS
DETROIT • LOS ANGELES • NEW ORLEANS
WASHINGTON • TORONTO • MONTREAL

FLINTKOTE
Products for Industry

FLINTKOTE INDUSTRIAL PRODUCTS

Univendor

Increases employee efficiency at no cost to you!

Fresh Candy from Clean, Modern Dependable Univendors Gives "On the Job" Energy—Cuts Employee "Lost Time".

Now your employees can enjoy fresh quality candy at no loss in plant time! For UNIVENDORS may be conveniently placed in plant, office or washroom locations . . . handy for plant and office personnel alike.

UNIVENDORS are installed, serviced and stocked with the finest brand candy by UNIVENDOR operators . . . *at no cost to you.* There is nothing to buy . . . your UNIVENDOR operator owns the equipment he installs. What's more—your proceeds may be used advantageously for goodwill, plant recreation, employee benefits, etc.

UNIVENDOR means the best in modern vendors. We will be pleased to recommend your local UNIVENDOR operator and have him make a plant survey for you. There is no obligation.

Write for illustrated literature today.

CHOOSE GUM OR MINT WITH NOVEL SELECTOR

Customer simply turns selector either way to gum or mint desired — then pulls lower knob for merchandise.

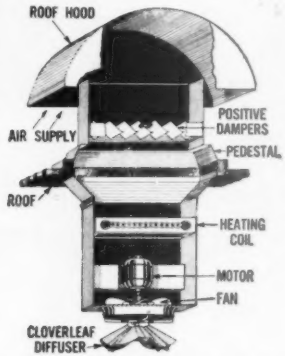
***Dual Coin and Change Maker** *Takes nickels or dimes through a single coin insert sells for 5c or 10c in any regular column.*

Stoner Mfg. Corp. 324 GALE ST., AURORA, ILLINOIS

TRANE INDUSTRIAL Weather Magic

Plant hard to heat? Maybe you have a NEGATIVE PRESSURE

The condition of negative pressure which is so frequently found in industrial plants is usually caused by small exhaust fans scattered through the plant for removing wood or metal shavings, dust, smoke, or contaminated air from the building.



Cutaway drawing showing arrangement of parts in Trane Ventilation Heater

Even though this negative pressure is slight, it is enough to draw untempered outside air in through cracks around windows, doors and walls, causing drafts and worker complaints in cold weather.

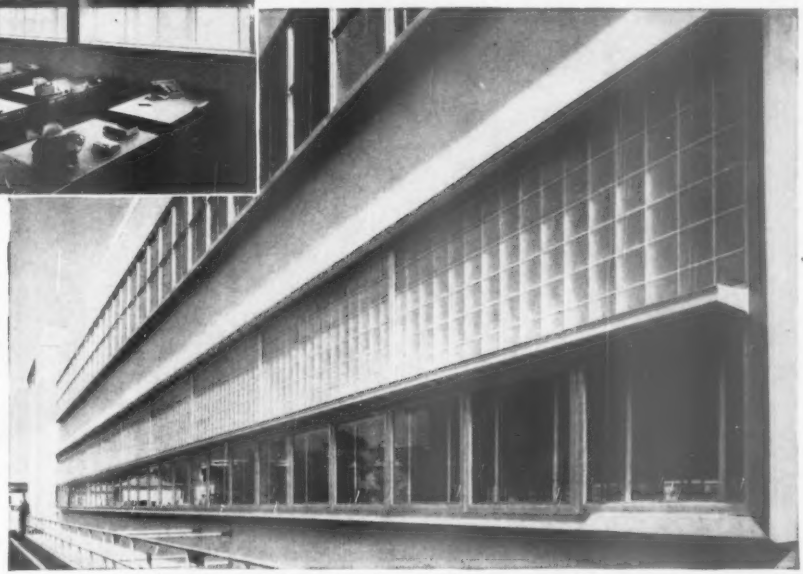
Trane Ventilation Heaters overcome this difficulty by delivering enough outside air at building temperature to cause a slight positive pressure inside. These same units, in summer, are ideal for supplying ventilation air.

For details, see the new edition of Trane Bulletin DS-364. This bulletin also covers both supply and exhaust types of roof ventilators. Secure a copy from the Trane sales office in your area, or direct from the factory.

THE TRANE COMPANY
LA CROSSE, WISCONSIN

Manufacturing Engineers of Heating, Ventilating and Air Conditioning Equipment—Unit Heaters, Convector-radiators, Heating and Cooling Coils, Fans, Compressors, Air Conditioners, Unit Ventilators, Special Heat Exchange Equipment, Steam and Hot Water Heating Specialties . . . In Canada, Trane Company of Can., Ltd., Toronto.

INSIDE: Directional Insulux Glass Block distributes daylight properly, improves working conditions in new offices of American Potash & Chemical Corporation, Los Angeles.



OUTSIDE: Attractive Insulux panels were wisely specified by the architect, whose aim was economical construction and maintenance and, at the same time, functional fenestration.

Architect: Rowland H. Crawford, Beverly Hills. Contractor: Jackson Brothers, Los Angeles.

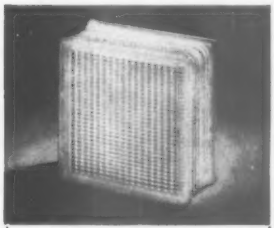
From any viewpoint, Insulux helps an office

Added up, the reasons for using Insulux Glass Block in offices and plants are enough to convince any alert businessman.

Here are only a few of the many, many advantages that are yours with Insulux:

1. **Correct daylighting. Each Insulux block design has its own purpose. For example, prismatic block No. 351 (above) directs daylight to the ceiling, where it is reflected and distributed over the entire room.**
2. **Low-cost maintenance. Insulux Glass Block does not require painting. Insulux is easy to keep clean—and does not rot, rust or corrode.**
3. **Insulation value. Heating costs are lowered, because glass block has high insulating value in winter (about the same as an 8-inch brick wall).**
4. **Handsome appearance. Insulux Glass Block not only serves functional purposes; it also enhances the appearance of any building.**

Before you build or modernize, investigate Insulux. There's no obligation. Write for complete details.



INSULUX
GLASS BLOCK ®
AMERICAN STRUCTURAL PRODUCTS COMPANY
Subsidiary of
OWENS-ILLINOIS GLASS COMPANY

MAIL COUPON TODAY

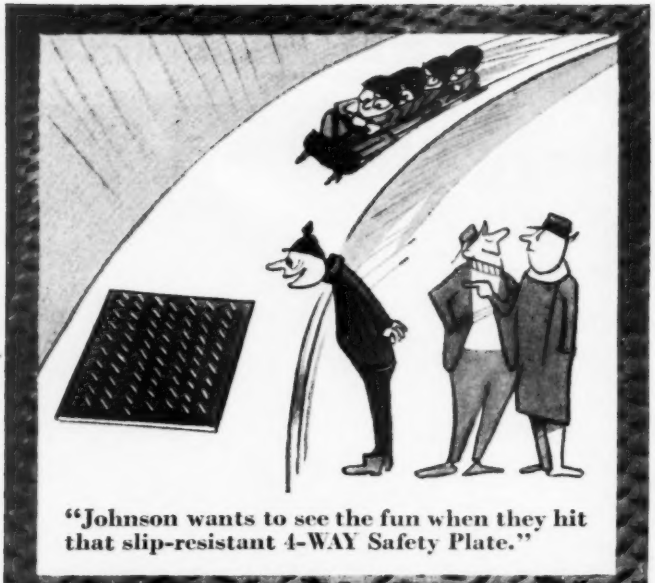
AMERICAN STRUCTURAL PRODUCTS COMPANY
P.O. Box 1035, Dept. F-27
Toledo 1, Ohio

Gentlemen:
Please send me free illustrated book, "Daylight in Industrial Buildings."

Name _____

Address _____

City _____ *County* _____ *State* _____



"Johnson wants to see the fun when they hit that slip-resistant 4-WAY Safety Plate."

Feet and wheels, too, find positive traction on Inland 4-WAY Safety Plate. That's why 4-WAY cuts accidents. Its raised lug pattern—on floors, steps, ramps—grips firmly in all directions, reduces lost man hours due to slips and falls. INLAND STEEL CO., 38 South Dearborn St., Chicago 3, Ill.

WRITE FOR BOOKLET

STOCKED BY LEADING STEEL WAREHOUSES

Inland 4-WAY SAFETY PLATE

Reg. U. S. Pat. Off.

"HOLY MOSES...

there's something I never knew before!"

F—11A

Unless you're exceptionally well-informed there are probably lots of things YOU never knew before right here in the advertising pages of this magazine. Alert manufacturers use these advertising pages to get the *news* about their products and services to you . . . quickly and effectively. Their advertisements contain information designed to help *you* do your job better, quicker and cheaper. To be well-informed about the latest developments in *your* industry . . . and to stay well-informed . . . *read all the ads too.*

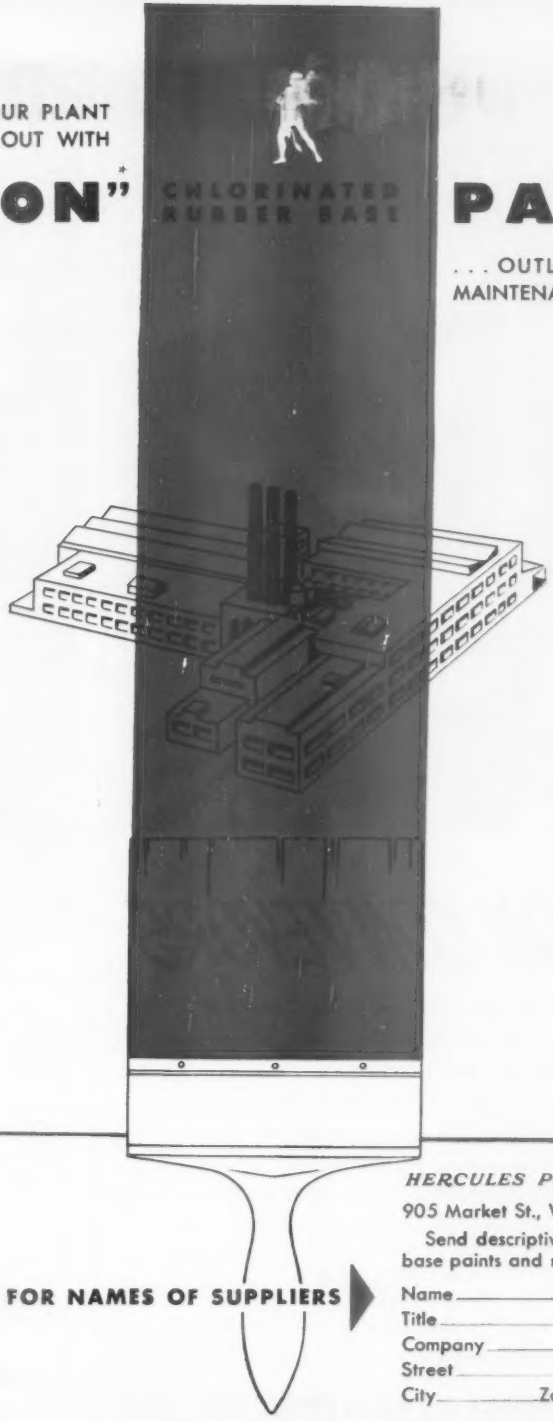
McGRAW-HILL PUBLICATIONS

PROTECT YOUR PLANT
INSIDE AND OUT WITH

"PARLON"* CHLORINATED RUBBER BASE PAINTS

. . . OUTLAST OTHER
MAINTENANCE PAINTS

ALKALIES
MOISTURE
ACIDS
GASES
FUMES
MOLD GROWTH



CORROSION
HUMIDITY
SOOT
OILS
SMOKE
ABRASION

RETURN COUPON FOR NAMES OF SUPPLIERS

"PARLON" IS A TRADE MARK

HERCULES POWDER COMPANY
905 Market St., Wilmington 99, Del.

Send descriptive literature on Parlon-base paints and names of suppliers.

Name_____
Title_____
Company_____
Street_____
City_____ Zone____ State_____

CR9-1

OLSON CONVEYORS

Manhandling, anywhere in your material handling system, means lost efficiency. That's why point-to-point, *continuous* material flow is important.

Olson equipment gives you continuous flow because it includes every type of elevator, chute or conveyor required to move your raw materials, parts or products from start to finish . . . from receiving to shipping.

Whether it's a single unit or a complete system . . . a combination of standard and custom engineered units . . . it is tailored to your particular handling problem.

Call Olson today! Get the details on really efficient handling through *continuous* material flow.

ELEVATING CONVEYING SYSTEMS

SAMUEL OLSON MFG. CO., INC.

2424 Bloomingdale Ave., Chicago 47, Illinois

ANNOUNCING . . .

The *New,* FASTER DRYING

Sani-Dri

HAND AND FACE DRYER

MODERNIZES WITHOUT STRUCTURAL CHANGES
THE ONLY DRYER WITH THE UNDERWRITER'S SEAL OF APPROVAL
BUILT-IN WALL MODELS AVAILABLE FOR NEW INSTALLATIONS

New, Improved Sani-Dri

CUTS DRYING TIME 25% OR MORE!

Now . . . a new, improved heating element makes Sani-Dri the fastest drying machine of its kind! This modern, sanitary method of hand and face drying now takes 25% *less time!* For new installations or modernizations of old washrooms, there's nothing like the new faster-drying Sani-Dri. Write for the latest facts today!

SAVES UP TO 85% OF WASHROOM COSTS!

You eliminate towels completely with the Sani-Dri. No unsanitary litter . . . no fire hazard . . . no paper clogged soil pipes — Sani-Dri provides completely *automatic* drying service 24 hours a day, year after year with little or no maintenance! Sani-Dri *pays for itself out of savings!*

GET THE LATEST FACTS!

New brochure 1082 shows both built-in wall and pedestal models of new faster-drying Sani-Dri electric hand and face dryer. Write today!

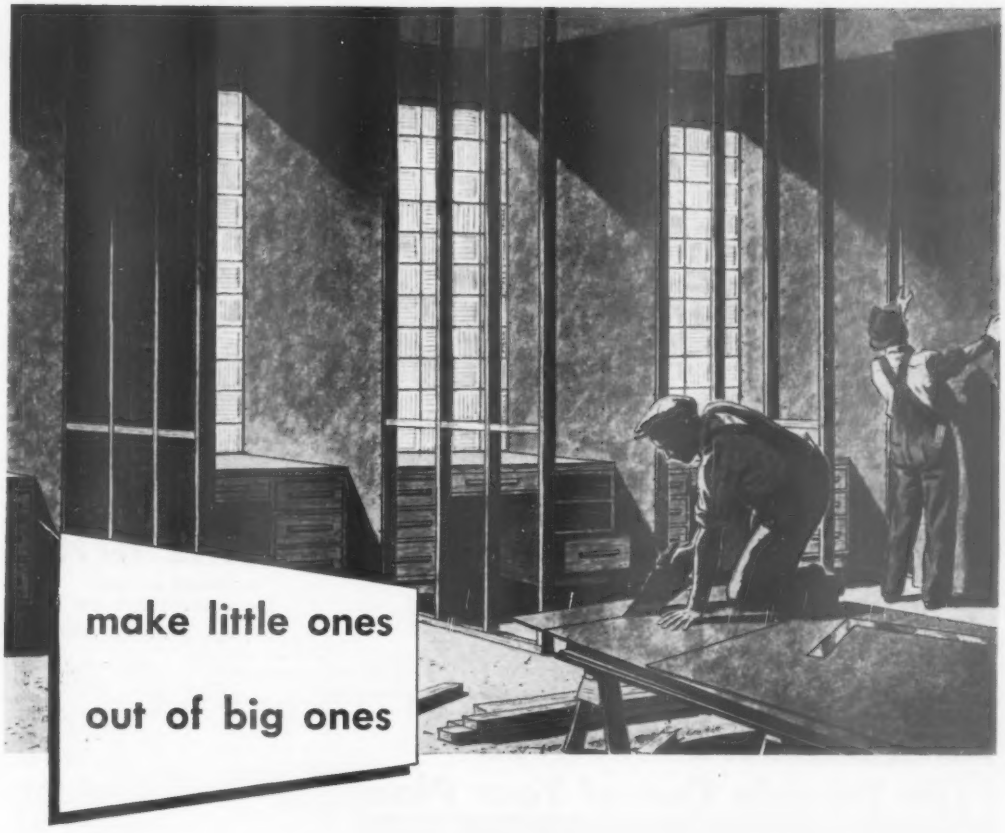
Distributors in Principal Cities

THE CHICAGO HARDWARE FOUNDRY CO.

"Dependable Since 1897"

1149 Commonwealth Avenue

NORTH CHICAGO, ILL.



ERECTING plant partitions is no problem at all when you use Masonite brand hardboards.

Strong and rigid, smooth and durable, they're easy to handle and go up quickly without special tools. You can give them handsome, lasting finishes. No need to interrupt work, either. Separate offices or whole areas can be partitioned off speedily and economically.

There's a Masonite hardboard for all your needs. Standard or Tempered Presdwood for partitions. Panelwood, designed expressly for smooth, durable walls in new construction or in remodeling. Leatherwood for executive offices and reception room. Temprtile for washroom or lavatory walls and wainscots. Tempered Presdwood for work-bench tops, bins, chutes, cabinets, shelving and for many other heavy-duty uses.

Masonite hardboards resist moisture permanently. They won't dent, check, crack or splinter. They can be bent to pleasing curved contours. All-wood, they have all the advantages of natural wood plus a lot more. And once they're installed, your maintenance costs drop sharply. Available at lumber and building supply dealers. Masonite Corp., Chicago 2, Ill.

MASONITE® BRAND PRODUCTS

STANDARD PRESDWOOD
TEMPERED PRESDWOOD
BLACK TEMPERED PRESDWOOD
LEATHERWOOD • TEMPRTILE
PANELWOOD • TEMPERED DUOLUX

"Presdwood" and "Temprtile" are registered trade-marks. "Masonite" signifies that Masonite Corporation is the source of the product.

FREE SAMPLES!

MASONITE CORPORATION
Dept. FA-4, 111 W. Washington Street, Chicago 2, Ill.

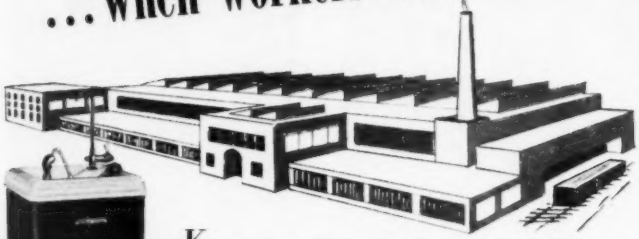
Please send me samples of Masonite Brand Products.

*Name*_____

*Address*_____

VOLUME 107, NUMBER 4 • APRIL, 1949

Any plant is more efficient ...when workers are satisfied



Keeping workers *fit* is a *must* on any plant production program. If workers are efficient plant management profits! Halsey Taylor Cooler Fountains help attain the maximum output from factory workers because they provide a trouble-free supply of refreshing cool water day in and day out. Write for catalog.

The Halsey W. Taylor Co., Warren, O.

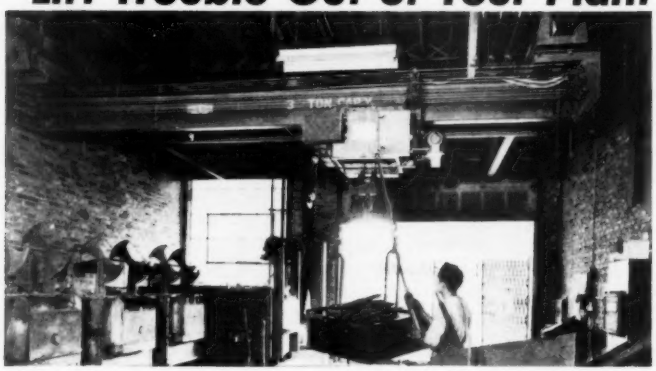
F2

Halsey Taylor

COOLER FOUNTAINS

ABELL-HOWE CRANES

Lift Trouble Out of Your Plant



Abell-Howe Cranes are no prima donnas. They move loads on schedule, without a hitch, with a minimum of maintenance, year in, year out. Their advanced design and rugged construction are the work of crane specialists who have concentrated on overhead handling equipment for 25 years. That is why it will pay you to look into the complete line of cranes, runways, monorail equipment and hoists . . . and the engineering service . . . that Abell-Howe delivers. Write us today.

Ask today for
Catalog C-106

ABELL-HOWE CO.
53 W. JACKSON BLVD., CHICAGO 4, ILLINOIS

CRANES AND RUNWAYS • MONORAILS • HOISTS • STORAGE RACKS

How to improve . . .
- ***your handling of others—***
- ***your leadership***

Try these 11 methods that business leaders use in dealing with people

Here is a practical manual bringing you a simple workable technique for handling others. It presents 11 pointers on what to do and say in your everyday business and social contacts with others, in order to win their cooperation, friendship and goodwill.

The important methods in this book are clearly demonstrated in numerous stories of real people of today, including outstanding business and industrial leaders. You gain a direct, easy-to-understand, easy-to-use technique for improving your relations with others and especially for securing better results in training, directing, supervising, and other elements of successful leadership.

The TECHNIQUE of HANDLING PEOPLE

By DONALD A. LAIRD and ELEANOR C. LAIRD

139 pages, illustrated, $2.75

Let these chapter key-phrases work for you:

1. Ask questions to win cooperation
2. Be brief to clear up troubles
3. Confident bearing to control others
4. Directness to reach into people's minds
5. Earnestness to arouse enthusiasm
6. Friendliness to overcome opposition
7. Good-finding to mobilize ability
8. Harness criticism in a way to win appreciation
9. Increase other's self-esteem to cultivate loyalty
10. Jingle praise to secure best efforts
11. Know your people to generate harmony
12. Leading—or driving?

Thousands of new, inexperienced executives and foremen feel acutely the need for some help to direct them in handling people. Dr. Laird has given 11 simple rules which will make your relations with others vastly more pleasant and fruitful—instantly useful rules no leader can safely neglect.

This book deals with men of the present day—men who have helped develop and now lead great business and industrial enterprises — showing how they have conquered obstacles and gotten to the top by modern methods.

READ WHAT - -

- **EUGENE G. GRACE, who became president of Bethlehem Steel at thirty-seven, says about observation;**
- **WALTER S. GIFFORD, who became president of A. T. & T. at forty, says about listening to opinions;**
- **CHARLES E. WILSON, self-made president of General Electric, says about wanting to get ahead;**
- **LOUIS RUTHENBURG, who became president of Servel at forty-six, says about the spirit of work.**

FREE!
10 DAY TRIAL

McGraw-Hill Book Co., Inc.
330 W. 42d St.,
NYC 18

Send me Laird's THE TECHNIQUE OF HANDLING PEOPLE for 10 days' examination on approval. In 10 days I will remit $2.75, plus a few cents delivery charge, or return the book postpaid.*

Name .....
Address .....
City ..... Zone ..... State .....
Company .....
Position ..... FAC 4-49

*Save! We pay delivery charge if you send cash with this coupon. Same return privilege.

How Frigidaire Air Conditioning Helps Solve Production Problems

Stepping up worker output and lifting morale are only two of the many ways in which Frigidaire Air Conditioning can help solve production problems for you. Specialized applications of Frigidaire Air Conditioning range all the way from regulating temperature and humidity in a pharmaceuticals laboratory to providing the rigid control of heat, dust and moisture needed for the manufacture and assembly of precision parts.

Frigidaire Air Conditioning is as dependable and efficient as it is versatile. Compressors, cooling units and controls are matched to work together like a championship team. That's why Frigidaire Air Conditioning operates at lowest cost, gives years and years of trouble-free service.

In addition to a complete line of Air Conditioners, Frigidaire also offers a new Electric Dehumidifier for removing excess humidity. Whatever your air conditioning needs, there is Frigidaire equipment to meet them. And your dependable Frigidaire Dealer is well equipped to provide sound advice on any air conditioning or refrigeration problems. He'll be glad to make a survey of your requirements without obligation to you.

Find his name in Classified Phone Book under "Refrigeration Equipment" or "Air Conditioning." Or mail coupon at right to Frigidaire Division of General Motors, Dayton 1, O. (In Canada, Leaside 12, Ont.)

Self-Contained Model SC 1031

Compact, high-capacity, self-contained air conditioner for business and industry. Quickly installed and easily moved from one location to another. There are also Frigidaire Central System Air Conditioners which offer capacities, types, and sizes to meet almost any air conditioning need.

Frigidaire Store Type Conditioners

Complete, large-capacity air conditioning system in one cabinet that requires little floor space. May be used singly or in multiple, with or without a simple duct system. Heating coil may be added.

Frigidaire Room Air Conditioners

are easily installed, self-contained units capable of furnishing an ample supply of cool, clean, dehumidified air for homes, offices, small workrooms, laboratories, etc.

Frigidaire Air Conditioning

For fast facts about Frigidaire Products—fill in and mail coupon today

Frigidaire Air Conditioning

☐ Room conditioners; store type conditioners; central systems. For controlling temperature, humidity, dust. For improving product quality, bettering working conditions for employees.

Frigidaire Electric Dehumidifier

☐ Prevents moisture damage, retards rust, mold and mildew, speeds paint and plaster drying in areas up to 25 x 40 x 8 ft. Plugs into any 115V 50-60 cycle outlet.

Frigidaire Water Coolers

☐ Self-contained types for offices and factories. Tank type for industrial water cooling—for cooling spot-welding electrodes, for heat-treating, for high speed coolants.

Frigidaire Low Temperature Cabinets

☐ For storing aluminum alloy rivets in an annealed condition. For shrinking metal parts prior to assembly. IceCream Cabinets for cafeterias and factory stores, available in 4 to 10 hole capacities.

Frigidaire Compressors

☐ For use with cooling units, tank-type water coolers and other applications.

Frigidaire Cooling Units

☐ Forced air cooling for hardening wax products and for controlling temperatures in a wide variety of manufacturing processes.

Frigidaire Reach-In Refrigerators

☐ Self-contained and remote types up to 60 cu. ft. For cafeterias and factory stores.

Frigidaire Beverage Coolers

☐ Self-contained and remote types, for wet or dry storage. For cafeterias and factory stores.

Over 400 Frigidaire commercial refrigeration and air conditioning products—most complete line in the industry.

Name .....

Firm Name .....

Address .....

City .....

County ..... *State* .....

GOOD Food at Noon... BETTER Work all Day!

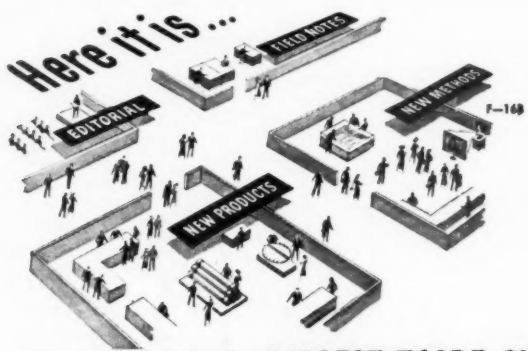
IF IT'S FROM PIX IT'S RIGHT

Balanced, nourishing meals served in the plant speed production... build plant morale... save time. You'll find industrial cafeterias designed and built by PIX in large plants and small... because PIX engineers and craftsmen consistently provide the right plant food service equipment for industry's every need, every budget.

Write for full information. Dept. A

ALBERT PICK CO., INC.

2159 PERSHING ROAD, CHICAGO 9



your industry's BIGGEST TRADE SHOW!

Your industry's biggest trade show isn't a once-a-year event. It comes to you with *every single issue* of this magazine. And, because it is scheduled so frequently, it can bring you a continuing series of up-to-the-minute "displays." In these advertising pages, you will find the latest news about products and services that are specially designed to help you do your job better, quicker, and cheaper. To be well-informed about the latest developments in *your* industry... and to stay well-informed... *read all the ads too.*

McGRAW-HILL PUBLICATIONS

HEADQUARTERS FOR INDUSTRIAL INFORMATION

How to develop

MORE EFFICIENT OPERATING PROCEDURES

for office and plant

● This book shows you how to set up time-saving methods for every regular function in your office and plant. It gives you proven procedures for breaking down each type of work into its step-by-step movements . . . and describes practical techniques for eliminating costly waste motion. Any manufacturer, superintendent, or foreman can put this book to work in developing standards that improve existing methods, help determine effective production operations, and serve as a guide in designing products for economical output.

Shows how to establish time standards — estimate time for new methods

Here's an entirely new approach to the problem of measuring time in manufacturing operations. This new method enables you **to make accurate time estimates** for a complete set of movements **comprising** any proposed job . . . evaluate different methods . . . **and alter** product **design while** still in the blueprint stage.

METHODS-TIME MEASUREMENT

By HAROLD B. MAYNARD
President, Methods Engineering Council

G. J. STEGEMERTEN
General Manager, Methods Engineering Council

JOHN L. SCHWAB
Division Manager, Methods Engineering Council

290 pages, scores of illustrations, charts, and graphs, $3.75

This book describes techniques for application of time-measurement to every motion without previous use of the stop watch, giving you concrete answers to problems of efficient, low-cost production. It tells you what the basic movements are, how to observe them, and how to take positive steps toward money-saving production methods.

CONTENTS

1. Methods Engineering
2. Methods—Time Measurement
3. Development of Data
4. Methods—Time Tables
5. Reach
6. Move
7. Turn
8. Grasp
9. Position
10. Release Load
11. Disengage
12. Walking
13. Other Motions
14. Principles of Limiting Motions
15. Accuracy of Standards
16. Elements of Measurement
17. Information and observation
18. Computation
19. Estimating from Drawings
20. Principles of Motion Economy
21. Analysis and Development
22. Principles of Economical Methods
23. Installation of Improved Methods
24. Simplified Data
25. Tool Design
26. Office Methods
27. Formula Derivation
28. Assembly Procedures
29. Performance Rating

SEE IT 10 DAYS FREE

McGRAW-HILL BOOK CO., 330 W. 42nd St., NYC 18

Send me Maynard, Stegemerten, and Schwab's **Methods-Time Measurement** for 10 days' examination on approval. In 10 days I will remit $3.75, plus a few cents postage, or return book postpaid.*

Name .....

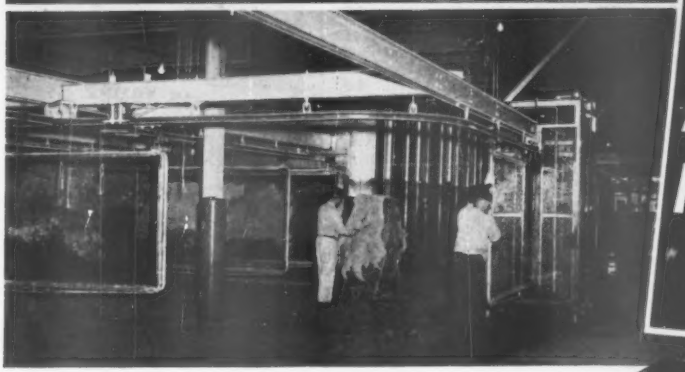
Address .....

City ..... Zone ..... State .....

Company .....

Position Fac-1-49

**We pay mailing costs if you send cash with this coupon. Same return privilege.*



Faster Drying with AMERICAN MONORAIL

Here's a simple MonoRail loop with carriers and "kicker" switches that really speeds up leather drying.

Sides or skins are pasted on glass plates in carrier frames suspended from a MonoRail track; all unnecessary manual handling is eliminated. After the wet leather is pasted on glass, the carrier moves through the dryer without rehandling and the dried leather is stripped from the glass plate for further processing.

An automatic switch transfers the carrier from single to double line travel through the dryer. After the leather has been removed, the carrier is automatically transferred from double to single line travel through the plate washer and pasting stations.

This is just another example of the simplicity of MonoRail application that most economically correlates transfer and processing operations. An American MonoRail engineer can show you how you can increase production and lower costs with American MonoRail Overhead Handling.

Photographs through courtesy of Proctor and Schwartz, Inc.

THE AMERICAN MONORAIL COMPANY

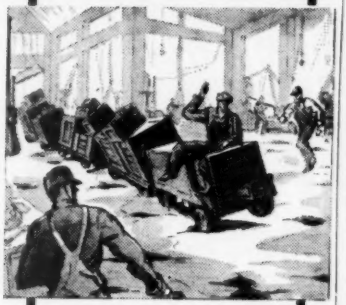
13114 ATHENS AVENUE **CLEVELAND 7, OHIO**

Patch or Resurface

RUTS & HOLES

in your

FLOORS



with

STONHARD RESURFACER

No matter how badly rutted, worn, or splintered,—you can easily make your floors smooth and wear-resistant over any week-end. Repair or resurface your floors with STONHARD RESURFACER to reduce accidents, speed traffic, increase efficiency and lower maintenance costs.

The choice of all industry since 1922

STONHARD COMPANY
Building Maintenance Materials
103 Stonhard Building
1306 Spring Garden Street
Philadelphia 23, Pa.

STONHARD COMPANY
103 Stonhard Building
1306 Spring Garden Street
Philadelphia 23, Pa.

Send me a FREE "Resurfacer Folder"

Firm .....

Mr. ..... Title .....

Address .....

City ..... Zone ..... State .....

(Continued from page B-1)

Ingersoll Steel Div., Borg Warner Corp. B-15
Inland Steel Company B-152
Inland Steel Products Co. B-136
International Nickel Co., Inc. B-105
Invincible Vacuum Cleaner Co. B-16

Jenkins Bros. B-143
Johns-Manville Co. ..... Insert B-91
Johnson & Son, Inc., S. C. B-12

Keasbey & Mattison Co. B-129
Kidde & Company, Inc., Walter B-117
Kinner Manufacturing Co. B-126
Koppers Company, Inc. B-100

Ladish Company ..... Insert B-106
Leader Electric Co. B-32
Luria Engineering Company B-87

Mahon Company, R. C. ..... B-139, Fourth Cover
Maple Flooring Manufacturers Assoc. B-118
Masonite Corp. B-155
McCloskey Construction Co. B-92
McGraw-Hill Book Co. B-156, B-158
Medart Products, Inc., Fred ..... Third Cover
Mercoid Corporation B-23
Modine Manufacturing Co. B-97
Muller Machinery Co. B-136

National Supply Co. (Spang-Chalfant Div.) B-101
New York Central System B-128

Ohio Injector Company B-137
Olsen Mfg. Co., Samuel B-154
Otis Elevator Co. B-120

Pangborn Corporation B-108
Patent Scaffolding Co. B-114
Pick Co., Inc., Albert B-158
Pittsburgh-Corning Corporation B-109
Pittsburgh Plate Glass (Brush Div.) B-18
Pittsburgh Plate Glass (Paints) B-9
Pittsburgh Steel Products Co. B-146
Pittsburgh Valve and Fittings B-121
Protectoseal Co. B-104

Rapids Standard Co., Inc. B-124
Reynolds Metals Co. B-142
Robertson Co., H. H. B-11
Roebling's Sons Co., John A. B-34
Rust-Oleum Corporation B-146

Safety & Maintenance Co., Inc. B-94
Schmeig Industries, Inc. B-96
Sherwin-Williams Company B-116
Silvray Lighting, Inc. B-20
Smooth Ceilings System B-114
Sonneborn Sons, Inc., L. ..... Insert B-107
Spencer Turbine Co. B-132
Square D Company B-33
Stoner Mfg. Corp. B-150
Stonhard Company B-160

Taylor Company, Halsey W. B-156
Temprite Products Corp. B-160
Tennant Co., G. H. B-112
Thomas & Betts Co. B-21
Trane Company B-150
Trumbull Electric Mfg. Co. B-103

Unistrut Products Co. B-119

Wayne Pump Company B-140
Westinghouse Electric Corp. B-6, B-7, B-98, B-99
Westinghouse Electric Corp. (Coca-Cola Div.) B-89
Westinghouse Electric Corp. (Elevator Div.) B-125
Westinghouse Electric Corp. (Sturtevant Div.) B-134, B-135
Wheeler Reflector Co. B-28
Wheeling Corrugating Co. B-133
Wing Mfg. Co., L. J. B-123

Young Radiator Co. B-138

Dependable FLOW CONTROL

...IN YOUR TEMPRITE DRINKING WATER COOLERS

1. Dependable, automatic flow-control does away with spouting and splashing. No annoying water fluctuations. **2.** Smart, streamlined styling blends harmoniously into all surroundings. **3.** Effortless finger-tip pressure produces a steady stream of perfect-temperature drinking water. **4.** Temprite bubbler design gives maximum sanitary protection.

User Protected by 5-Year Warranty Plan

All models meet requirements of the National Bureau of Standards and Underwriters Laboratories, Inc.

Write for name of distributor in your neighborhood.

Manufacturers of water cooling equipment since 1929.

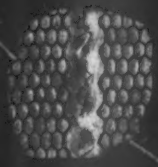
TEMPRITE PRODUCTS CORP.

35 PIQUETTE AVE. DETROIT 2, MICH.

Baldwin-Hill **BLANKETS**

the efficient wrap-around insulation

made with **BLACK** *rockwool*



the fibres interlock!

effective to **1200°F**

adaptable for large surfaces!
low installation cost!

Baldwin-Hill Company
714 Brunig Ave., Trenton, N. J.

Send for free copy of our catalog "Industrial Insulation" which describes B-H BLANKETS and other Baldwin-Hill insulations.

Name_____ Position_____

Firm_____

Address_____

How to get MAXIMUM PLANT PROTECTION at MINIMUM DOLLAR OUTLAY!

CALL YOUR TRAINED ANCHOR FENCE ENGINEER!

A PROTECTIVE fence is as much a part of an industrial plant as the buildings themselves. That's why Anchor Fence engineers are specifically trained in solving industrial problems. They have the "know-how" to give sound advice that buys you better protection at lower cost. For the latest information on industrial fencing, look in your phone book now and call a trained Anchor Fence engineer. No obligation, of course.

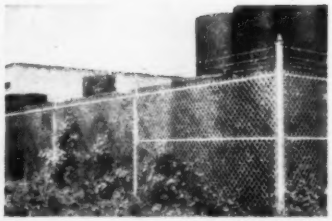
WRITE TODAY for our folder, "Anchor Fences." Shows the many applications of fencing to industrial plants, schools, public properties, etc. Write to: ANCHOR POST FENCE DIVISION, Anchor Post Products, Inc., 6620 Eastern Ave., Baltimore 24, Md.

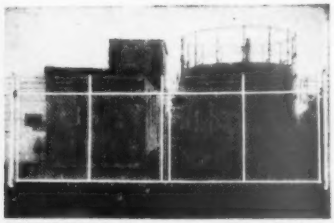
Anchor Fence

Nation-wide Sales and Erecting Service

Get the answers to questions like:

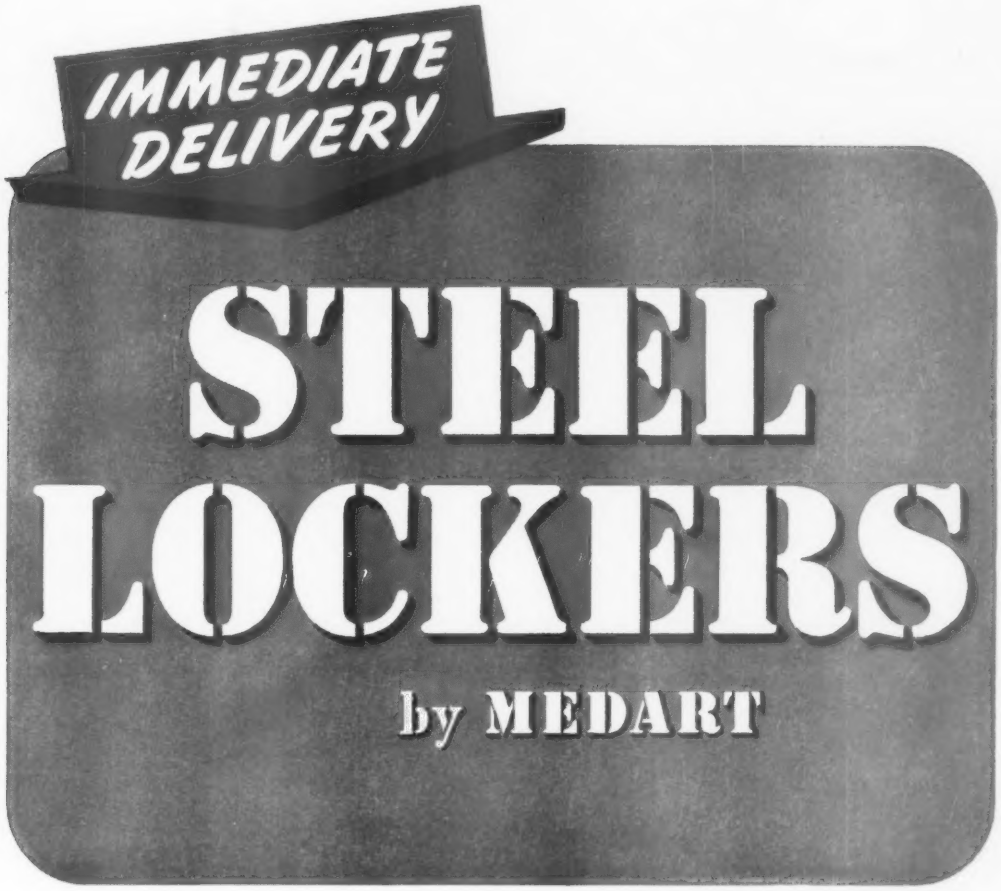
1. How much protection do we need?
2. What height fence is required to protect our products?
3. Do we need barbed wire protection?
4. What sizes and types of gates would best suit our needs?
5. How should we locate gates and fence for best protection?





ANCHOR CHAIN LINK FENCE is the best way to shut out trespassers, snoopers and all kinds of vandals. Also controls employee and motor traffic in and out of your plant a lot more efficiently, as well as protecting outdoor storage of materials and supplies . . . to free valuable plant space for production purposes.

FOR LONGER-LASTING PROTECTION Anchor gives you *Deep-Driven Anchors* to hold the fence erect and in line; *H-Beam Line Posts*, self-draining, rust-free rigid; *Square Frame Gates*, free from warping and sagging; *Square Terminal Posts*, providing strength, beauty and non-climbability.



Medart *all-steel* Lockers are now available for *immediate delivery*... In sizes and types to fit every industrial need... Medart has been supplying lockers to industry for more than a quarter of a century... Remember! There are other lockers that have some features that were originally developed by Medart... only MEDART LOCKERS have all those features which have earned for Medart the slogan "The Standard of Comparison."

Write for Descriptive Literature and Prices.

FRED MEDART PRODUCTS, INC.

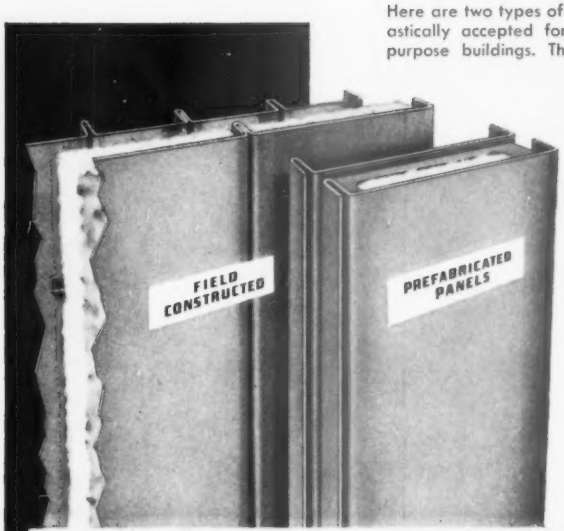
3543 DEKALB STREET

ST. LOUIS 18, MISSOURI

INSULATED STEEL WALLS

and STEEL DECK ROOFS

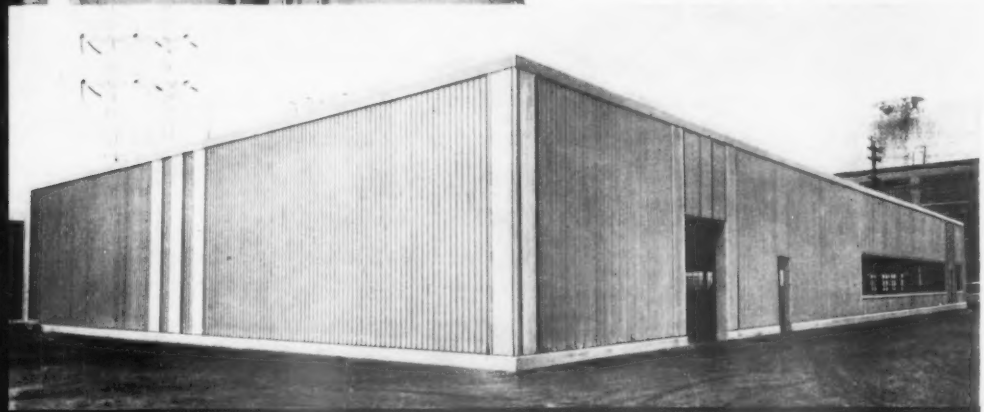
for INDUSTRIAL and COMMERCIAL BUILDINGS



Here are two types of Mahon Insulated Steel Walls which have been enthusiastically accepted for certain types of industrial, commercial and special purpose buildings. The "Field Constructed" Wall—which appears in the illustration below—has stiffening ribs at six inch centers on the outside of the wall . . . the inside surface of the wall is smooth, with an interlocking joint at one foot centers. Walls constructed with the "Prefabricated Panels" have stiffening ribs at one foot centers on the exterior side, while the inside surface is the same as the "Field Constructed" Wall. Pilaster effects, visible in the illustration below, are obtained by reversing standard wall plates. Where desirable, both types of wall can be furnished with exterior plates of Stainless Steel. Thermal properties are excellent—Coefficient "U" is equivalent to an 18" solid masonry wall. This type of wall construction in combination with Mahon Steel Deck Roofs costs less, provides a firesafe, permanent building which can be quickly and economically erected. Complete information and construction details appear in Sweet's Architectural and Engineering Files.

THE R. C. MAHON COMPANY
Detroit 11, Michigan • Chicago 4, Illinois
Representatives in all Principal Cities

Manufacturers of Insulated Steel Walls, Steel Deck for Roofs, Ceilings, Floors, Partitions and Doors, Rolling Steel Doors, Grilles, and Underwriters' Labeled Rolling Steel Doors and Fire Shutters.



MAHON